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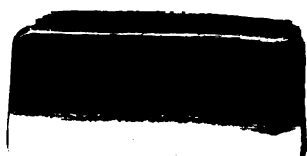
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SUPPLEMENT  
TO THE  
ANNUAL REPORT  
OF THE  
State Engineer and Surveyor  
OF THE  
STATE OF NEW YORK

For the Fiscal Year Ended June 30, 1916



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TRANSMITTED TO THE LEGISLATURE JANUARY 10, 1917

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ALBANY  
J. B. LYON COMPANY, PRINTERS  
1917



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**REPORT**

**ON**

**HYDRAULIC DATA**  
**1916**

**DEPARTMENT OF STATE ENGINEER AND  
SURVEYOR**

**COMPRISING THE SEVENTEENTH ANNUAL REPORT ON  
STREAM GAGING**

**G. EDWARD GIBSON, C. E.**

*Assistant Engineer.*

N. Y. State Engineer + Surveyor 10-25-179



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## REPORT ON STREAM GAGING FOR 1916

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Hon. FRANK M. WILLIAMS, *State Engineer and Surveyor*:

Sir.— I have the honor to submit a report on, and the results of the hydraulic work of the Department of State Engineer and Surveyor, for the nine-month fiscal year ending June 30, 1916.

This report contains hydraulic and climatological data obtained during that period, as follows: Observations of water-surface elevations, records of the discharge of streams and precipitation in the Barge canal zone, collected by this Department; gaging records of streams, throughout the state, furnished by the United States Geological Survey in coöperation either with this Department or with the New York State Conservation Commission; stream discharge and precipitation, mainly in the Catskill watersheds, supplied by the Board of Water Supply of the city of New York; United States Weather Bureau records, and other stream gagings furnished by corporations or individuals. Credit for same, where due, is given in connection with the several station records. The aim of this report has been to publish not simply data secured by this Department but all available stream flow data in the state during the year in one volume for the convenience of the public. This comprehensive treatment does not apply, however, to rainfall records.

Considerable time and study have been devoted to the reorganization of the gaging work. Material for the new standard vertical staff gage has been purchased and its installation is in progress. This gage shows directly actual elevations above Barge canal datum (sea-level). A set of "Instructions Regarding Stream Gages" has been prepared, officially promulgated and published in pamphlet form. These instructions provide an authorized standard heretofore lacking for this work. Wherever possible specially employed gage readers are being replaced by employees of the Department of Public Works. This will, I believe, result in more reliable records.

The present system of monthly reports by gage readers on letter size sheets will shortly be replaced by a system of quarterly reports in book form. This book, vest pocket size, can be readily carried to the gage and the original record made in it, a practice not generally in vogue, it is believed, with the present form of monthly reports. Each week's record will be recorded on one page similar in arrangement to that of the weekly report card thereby reducing errors of transcription.

Stream measurement work for the State of New York is done in two ways: First, actually by the Department of the State Engineer and Surveyor in the Barge canal ~~one~~; second, throughout the remainder of the State by the United States Geological Survey under Mr. C. C. Covert, District Engineer, funds for which work during the fiscal year of nine months ending June 30, 1916, were supplied as follows: By the Department of the State Engineer and Surveyor, \$1,500; New York State Conservation Commission, \$10,000; United States Geological Survey, \$1,875.

The report of Mr. C. C. Covert, District Engineer, covering the work of the United States Geological Survey in ~~coöperation~~ with the State of New York for the nine months ending June 30, 1916, will be found following this report. (See page 10.)

### SCOPE

This report contains records from 175 stream gaging stations, at 71 of which discharge is obtained, and 51 precipitation stations, maintained as shown below:

MAINTAINED BY	Stream stations	Discharge records	Precipitation stations
	No.	No.	No.
Department of State Engineer.....	115	15	2
U. S. Geological Survey with Department of State Engineer..	10	10	.....
U. S. Geological Survey with State Conservation Commission	39	38	.....
Board of Water Supply of New York City.....	5	5	36
U. S. Weather Bureau with Department of State Engineer...	.....	.....	8
Miscellaneous.....	6	3	5
Totals.....	175	71	51

This report covers a period of nine months from October 1, 1915, to June 30, 1916, inclusive, comprising the fiscal year. The 1915 report covered twelve months from October 1, 1914, to



TYPICAL GAGING STATIONS

a. For bridge measurement

no

September 30, 1915, inclusive. Earlier reports coincided with the respective calendar years.

Gages maintained by this Department to determine water-surface elevations are in general read to the nearest tenth foot with only occasional half-tenth foot readings (there are a few gages read in inches) and the hundredths of feet appearing in the tables of water-surface elevations are due to the elevations of the zero of the gage and should not be understood to indicate readings to hundredths of feet. The closeness to which readings are made will be evident upon an inspection of each table.

For an explanation of the data you are referred to those sections of the report of Mr. C. C. Covert District Engineer, United States Geological Survey, headed "Explanation of Data," and "Accuracy and Reliability of Data" (pp. 14-7), which cover the same ground and render a repetition herein needless.

In closing I wish to acknowledge the uniform courtesy and valuable assistance I have received from Mr. C. C. Covert, District Engineer, United States Geological Survey, and his assistants in connection with this work.

Mr. Covert's report of the work of the United States Geological Survey in coöperation with the State of New York, a statement defining certain hydraulic terms used, a table of convenient equivalents, the hydraulic data and the climatological data are attached hereto in the order named.

Respectfully submitted,

G. EDWARD GIBSON, C. E.,

*Assistant Engineer.*

October 18, 1916.

# REPORT OF UNITED STATES GEOLOGICAL SURVEY

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DEPARTMENT OF THE INTERIOR  
UNITED STATES GEOLOGICAL SURVEY

WATER RESOURCES BRANCH

ALBANY, N. Y., November 4, 1916.

HON. FRANK M. WILLIAMS, *State Engineer and Surveyor,*  
*Albany, N. Y.:*

Dear Sir.—Transmitted herewith is a report on the coöperative hydrometric work carried on by the United States Geological Survey and the State of New York during the nine months ended June 30, 1916. This report contains data collected in coöperation with both your Department and the Conservation Commission.

Mr. N. C. Grover, Chief Hydraulic Engineer, and Mr. John C. Hoyt, Engineer in charge of surface water investigations, have had general supervision over the work.

The detailed report submitted has been prepared under my direction by Mr. O. W. Hartwell, Assistant Engineer, assisted by the several junior engineers whose names appear in the body of the report and by Mr. W. A. James and Miss Helen Kimmey, clerks, all of the United States Geological Survey, Albany district office.

Acknowledgments are due the engineers of your Department and the Conservation Commission for assistance rendered at various times.

It has been our effort to obtain data which were of special value to both departments and, at the same time, meet the demands of the general public. The results of the nine months' work are respectfully submitted.

Very truly yours,

C. C. COVERT,

*District Engineer, New York District.*



TYPICAL GAGING STATIONS  
b. For wading measurement



2011

PROGRESS REPORT ON HYDROMETRIC WORK CARRIED ON BY THE  
UNITED STATES GEOLOGICAL SURVEY IN COÖPERATION WITH  
THE STATE ENGINEER AND SURVEYOR AND THE STATE CONSER-  
VATION COMMISSION.

By C. C. COVERT, *District Engineer*

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Because of a change in the period covered by the State fiscal year, this report contains data for the nine months, ending June 30, 1916, instead of for the complete climatic year, October 1 to September 30, as was used in the last report.

In accordance with the policy adopted last year by Commissioner George D. Pratt of the Conservation Commission, data obtained in coöperation with his department are being published in this report. These data are omitted from the Conservation Commission report to avoid duplication.

The funds provided for the year's work were:

Conservation Commission .....	\$10,000 00
State Engineer and Surveyor.....	1,500 00
* United States Geological Survey.....	2,500 00

The amounts actually expended during the nine months covered by this report were:

Conservation Commission . . . . .	\$9,595 36
State Engineer and Surveyor.....	1,331 92
United States Geological Survey.....	1,802 49

The original plans for the fiscal year, ending September 30, 1916, included the installation of several new stations, providing the up-keep cost of the old stations would permit. This up-keep cost is largely regulated by climatic conditions. During the period, March 28 to June 30, 1916, there occurred a number of heavy storms in the southwestern part of the state. On the Genesee river there were five floods that overflowed the bottom lands. As a result of these floods, several new rating curves were necessary before estimates of discharge could be made. These

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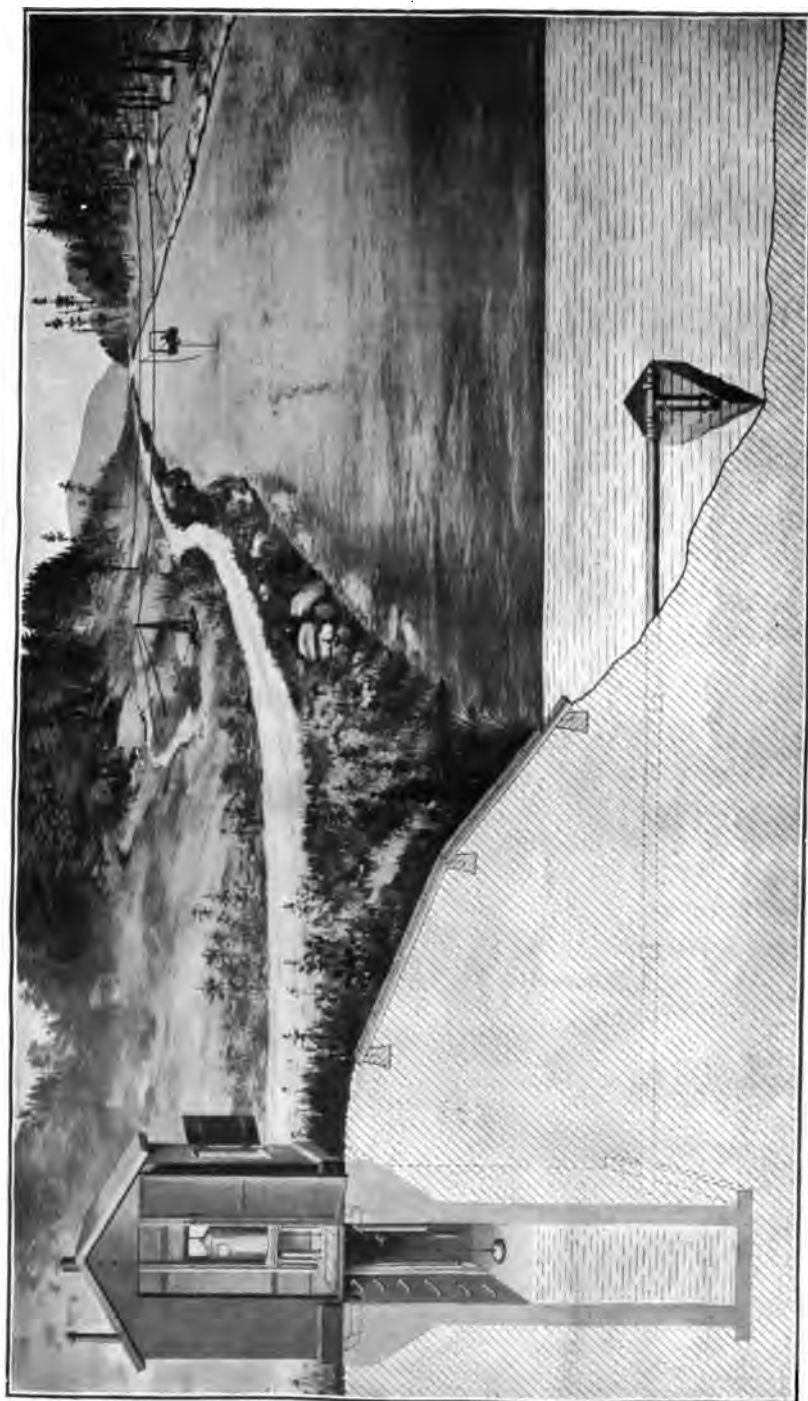
\* Federal appropriation became available July 1 instead of September 1.

conditions extended to other sections of the state, although in a modified form, and consequently it was found impossible to take up as much of the work on new stations as we otherwise might have done, before June 30. However, three new records were started (Genesee river at Scio, Oswegatchie river near Heuvelton and West branch of Ausable river near Newman), and the reconnaissance work was completed for four other stations. The field equipment for these stations was purchased but the unusually high-water conditions prevented any economical attempt towards construction. The work was also delayed somewhat by inability to have the iron work for cable stations delivered. We were, however, able to install the cableway and the sloping staff gage equipment on St. Regis river at Brasher Center. We also prepared the anchorages for the cable equipment to West Branch Delaware river at Hale Eddy, and purchased the material for a water-stage recorder on Indian river below Indian Lake dam.

The policy being followed is to gradually build up a system of base stations with equipment that will produce all-the-year-around records and to supplement this work in the several drainage basins by a system of secondary stations where intermittent and short time records can be obtained. This plan has been closely followed since the opening of the district office in Albany in 1909.

The location of each station is the result of a careful reconnaissance. The development of the automatic water-stage recorder has made the scope of location more flexible. The engineer is no longer confined to the highway bridge or the nearness of a local observer competent to read the gage. With the use of modern equipment consideration has to be given only to the opportunities offered for making good discharge measurements and to the possibility of developing a good rating curve for the entire range of stage. These later characteristics have controlled the location of most of the gaging stations now in active operation and the higher degree of accuracy obtained is demonstrated by the uniformly better rating curves developed (See plate V).

The standard methods of the United States Geological Survey have been closely followed in both field and office. Each year not only adds to the number of stations from which records are available, but makes possible more dependable data from all stations.



Cross-section of typical gaging station



The water-stage recorder has been an important factor in obtaining dependable records on some streams. In fact it provides the only means for obtaining such data in many cases where the stream is under artificial regulation. The continuous record of this instrument not only indicates the correct daily discharge, but also records the actual maximum and minimum stages. Three types are in general use (See plate IV). Structures of both concrete and timber are used for housing these registers. These are described in one of the water-supply papers\* issued by the United States Geological Survey.

The stay wire has become standard equipment for all stations, as by its use the engineer is able to obtain a more nearly uniform degree of accuracy in all discharge measurements. The high-water measurements, as well as those for medium and low stages, are all made by using the two point method.

Even with standard equipment, standard methods and proper location of stations, accurate results can be obtained only through constant attention. Floods often alter the stream beds or move the gages. To guard against these troubles, occasional discharge measurements must be made and each gage should be checked with a level at least once a year.

During the winter months, when the open water relation between gage height and discharge has been destroyed by ice, extra work is necessary in the way of making meter measurements in order to make estimates of discharge. Standard methods† developed during the past few years have enabled us not only to increase the number of winter stations being maintained, but to increase the accuracy of the data as well.

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\* U. S. Geological Survey Water-Supply Paper 371, Equipment for Current-Meter Stations G. J. Lyon, 1915.

† U. S. Geological Survey Water-Supply Paper 337, The Effects of Ice on Stream Flow, W. G. Hoyt, 1913.

This report includes data from the following stations:

#### GAGING STATIONS

Hudson river at North Creek.	Genesee river at Rochester.*
Hudson river at Thurman.	Canaseraga creek near Dansville.
Hudson river at Spier Falls.*	Canaseraga creek near Groveland Station.
Hudson river at Mechanicville.	Canaseraga creek at Shakers Crossing.*
Cedar river at Indian Lake.	Keshequa creek near Sonyea.
Indian Lake reservoir.	Owasco outlet near Auburn.*
Schroon river at Riverbank.	Orwell brook near Altmar.
Sacandaga river near Hope.	Black river near Boonville.
Sacandaga river at Hadley.*	Black River canal, flowing south, near Boonville.*
West branch of Sacandaga river at Black-bridge near Wells.	Forestport feeder near Boonville.*
Hoosic river near Eagle Bridge.	Moose river at Moose River.
Mohawk river at Vischer Ferry dam.*	Middle branch of Moose river at Old Forge.
Alplaus kill near Charlton.*	Beaver river near Beaver River
East branch of Delaware river at Fish Eddy.	Oswegatchie river near Heuvelton.
Delaware river at Port Jervis.	Oswegatchie river near Ogdensburg.
Beaver kill at Cooks Falls.	East branch of Oswegatchie river at Newton Falls.
West branch of Delaware river at Hale Eddy.	Raquette river at Piercefield.*
Susquehanna river at Conklin.*	Raquette river at Massena Springs.
Chenango river near Chenango Forks.*	St. Regis river at Brasher Center.
Chemung river at Chemung.	Deer river at Brasher Iron Works.
Allegheny river at Red House.	Richelieu river at Fort Montgomery.
Cattaraugus creek at Versailles.	Saranac river near Plattsburg.
Little Tonawanda creek at Linden.	Ausable river at Ausable Forks.
Genesee river at Scio.	West branch of Ausable river near New- man.
Genesee river at St. Helena.*	Lake George.
Genesee river at Jones' Bridge.*	

\* Indicates stations equipped with water-stage recorder.

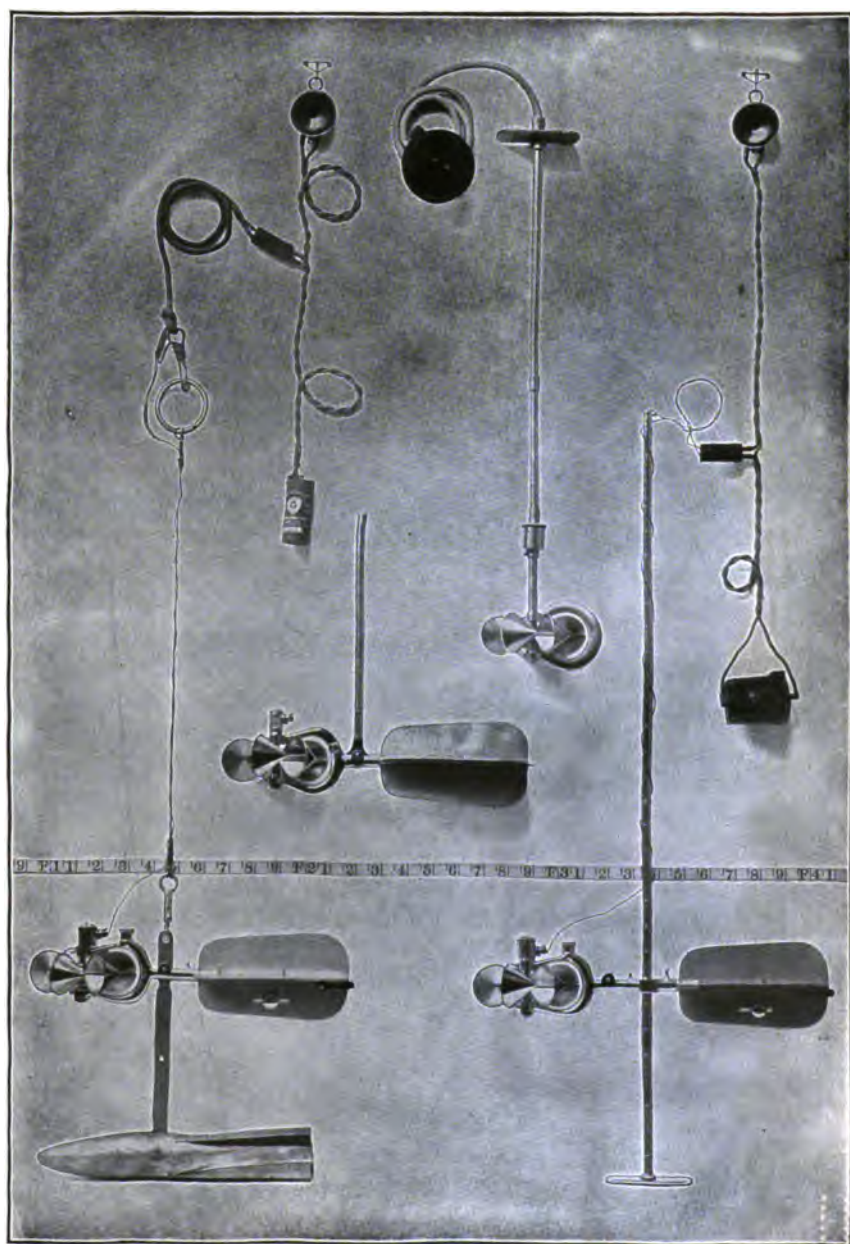
#### EXPLANATION OF DATA

The stations discussed are considered in order downstream. Records for all stations on the main river from its source to its mouth are presented first and records for its tributaries in regular order, from source to mouth, follow, all records for each tributary drainage basin being given before those of the next basin below.

For each regular current-meter gaging station the following data, so far as available, are given: Description of station, list of discharge measurements, table of daily gage heights, table of daily discharge, table of monthly and yearly discharge and run-off. For stations located at dams the gage-height table is usually omitted.

In addition to statements regarding the location and installation of current-meter stations, the descriptions give information in regard to any conditions which may affect the constancy of the relation of gage height to discharge, covering such factors as ice,

PLATE III.



Small Price current-meters





logging, shifting channels, and backwater; also information regarding diversions which decrease the total flow at the measuring section. Statements are also made regarding the accuracy and reliability of the data.

The discharge-measurement table gives the results of the discharge measurements made during the year, including the date, name of hydrographer, gage height in feet, and discharge in second-feet.

The table of daily gage heights records the fluctuations of the stage of the river as found from the mean of the gage readings taken each day. At stations not equipped with recording instruments, the gage is usually read by the observer in the morning and in the evening. The gage height given in the table represents the elevation of the surface of the water above the zero of the gage. All gage heights affected by the presence of ice in the streams, or by backwater from obstructions, are published as recorded, with suitable foot-notes. The rating table is not applicable for such periods unless the proper corrections to the gage heights are known and applied. Attention is called to the fact that the zero of the gage is placed at an arbitrary datum and has no relation to zero flow or the bottom of the river. In general, the zero is located somewhat below the lowest known flow, so that the readings shall not be negative value.

The discharge measurements and gage heights are the base data from which rating tables, daily-discharge tables and monthly-discharge tables are computed.

The rating table gives, either directly or by interpolation, the discharge in second-feet corresponding to every stage of the river recorded during the period for which it is applicable. Rating tables are not published in this report, but if desired for the purpose of verifying the published results they can be made from the daily gage heights and daily discharge as follows:

First, plot the discharge measurements for the current and earlier years on cross-section paper with gage heights in feet as ordinates and discharge in second-feet as abscissas. Then, tabulate a number of gage heights taken from the daily gage-height table for the complete range of stage given and the corresponding discharge for the days selected from the daily-discharge table, and

plot the values on cross-section paper. The last points plotted will define the rating curve used and will lie among the plotted discharge measurements. After drawing the rating curve, a table can be developed by scaling off the discharge in second-feet for each tenth foot of gage height. These values should be so adjusted that the first differences shall always be increasing or constant, except for known conditions of backwater.

The table of daily discharge gives the discharge in second-feet corresponding to the observed gage heights as determined from the rating tables.

In the table of monthly discharge the column headed "Maximum" gives the mean flow, as determined from the rating table, for the day when the mean gage height was highest. As the gage height is the assumed mean for the day, it does not indicate correctly the stage when the water-surface was at crest height and the corresponding discharge was consequently larger than given in the maximum column. Likewise, in the column headed "Minimum," the quantity given is the mean flow for the day when the mean gage height was lowest. The column headed "Mean" is the average flow in cubic feet for each second during the month. On this the computations for the remaining columns are based.

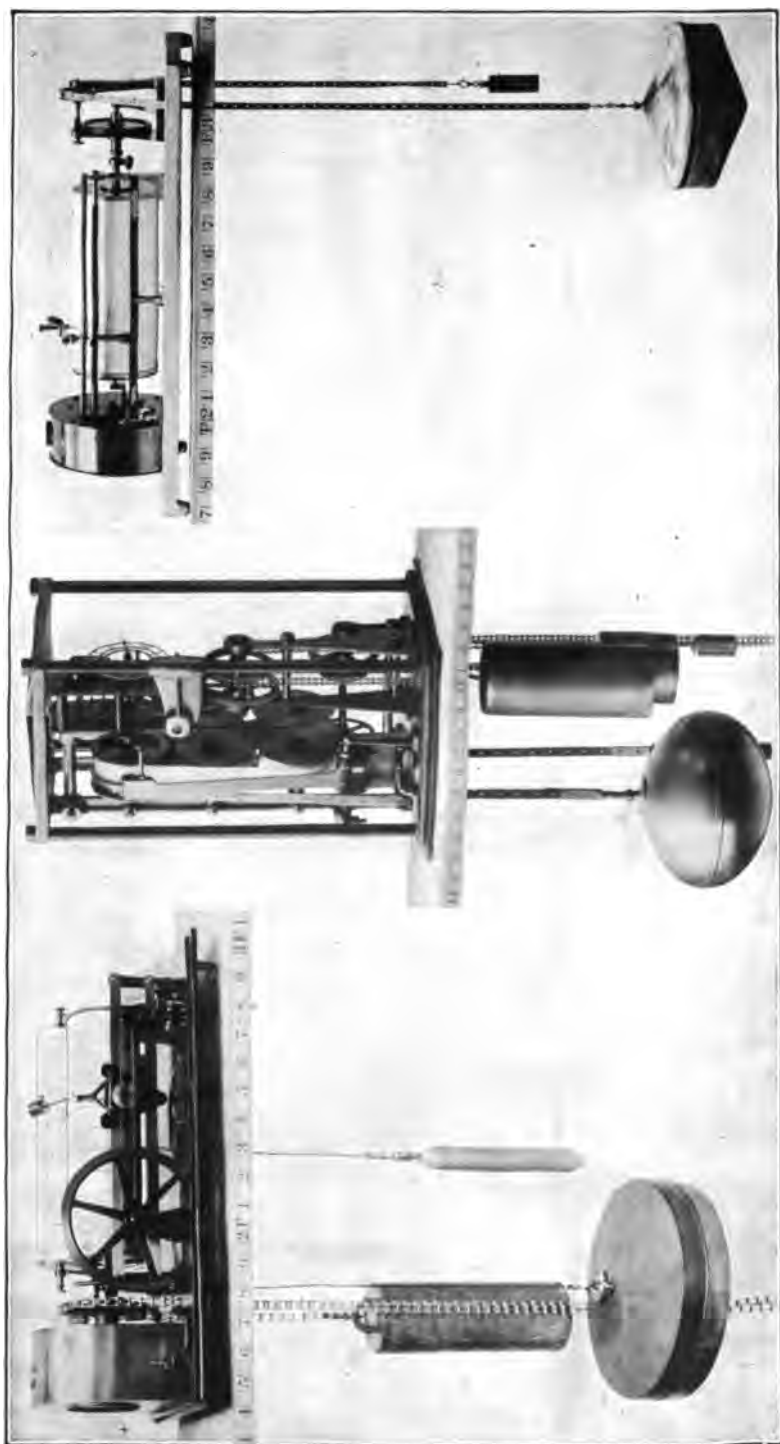
The base data presented in this report, unless otherwise stated in description of station, have been collected by the methods commonly used at current-meter gaging stations and described in standard text books.

#### ACCURACY AND RELIABILITY OF DATA

The accuracy of stream-flow data depends primarily on the natural conditions at the gaging station and on the methods and care with which the data are collected. Errors of the first group depend upon the degree of permanency of channel and of permanency of the relation between discharge and stage.

Errors of the second class are due, first, to errors in observation of stage; second, to errors in measurements of flow; and third, to errors due to misinterpretation of stage and flow data.

The accuracy column in the monthly-discharge table does not apply to the maximum or minimum nor to any individual day, but to the monthly mean. It is based on the accuracy of the rat-



A, Stevens

B, Gurley  
AUTOMATIC WATER-STAGE REGISTERS

C, Friez



ing, the probable reliability of the observer, and knowledge of local conditions. In this column A indicates that the mean monthly flow is probably accurate within 5 per cent; B, within 10 per cent; C, within 15 per cent; D, within 25 per cent. Special conditions are covered by foot-notes.

Even though the monthly means for any station may represent with a high degree of accuracy the quantity of water flowing past the gage, the figures showing discharge per square mile and depth of run-off in inches may be subject to errors, which result from including in the measured drainage area some noncontributing districts or omitting estimates of water diverted for municipal supplies or other purposes, and they should, therefore, be considered as only approximate, particularly for winter periods or low water. For these errors it is as a rule not feasible to make adequate correction.

The table of monthly discharge is so arranged as to give a general idea of the flow at the station, but should be used only for preliminary estimates. The computations of daily discharge allow more detailed studies of the variation in flow by which the period of deficiency may be determined.

It should be borne in mind that the observations in each succeeding year may be expected to throw new light on data already collected and published, and the engineer who makes use of the figures presented in this report should familiarize himself with the conditions under which they were collected before attempting to draw conclusions for periods other than those covered by the data.

## HYDRAULIC DATA

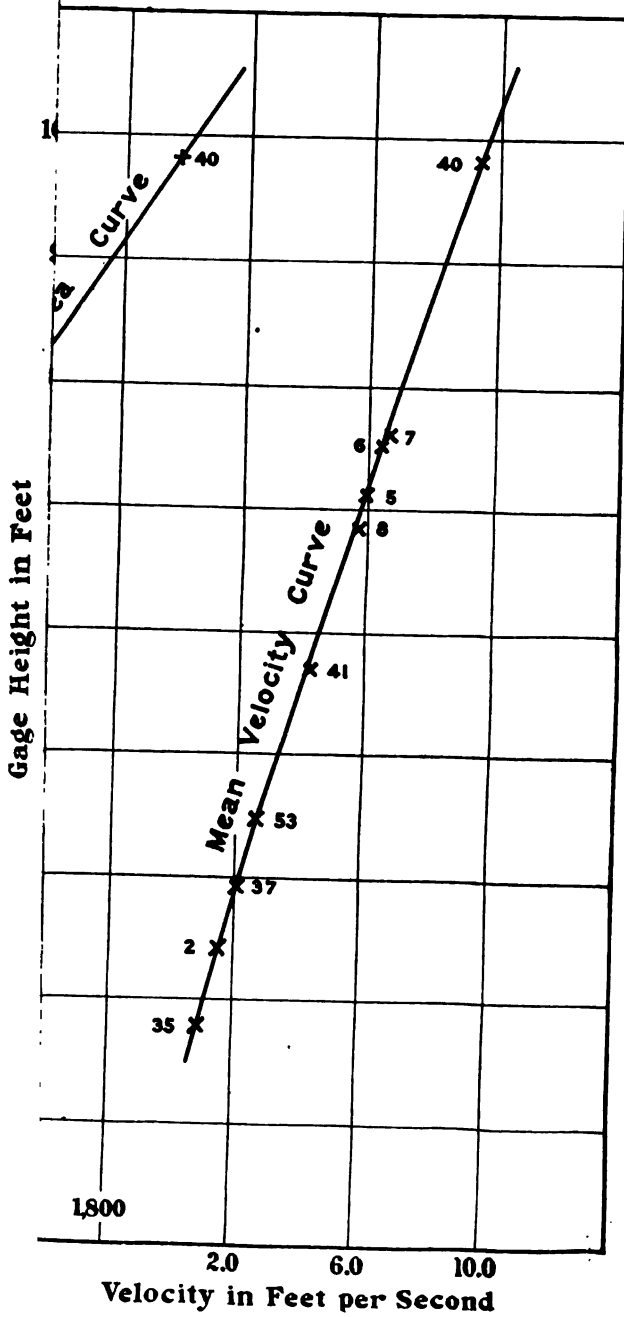
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### DEFINITION OF TERMS

**Barge canal datum** is sea-level (mean tide) at Governor's Island, which has been taken as 14.73 feet below the "Grist-mill" bench-mark in Greenbush (now Rensselaer), N. Y. This bench-mark was established by the United States Coast and Geodetic Survey in 1857 and is described as a cross cut in the face of the cellar wall of an old grist-mill at Greenbush, opposite Albany. This structure has been torn down within the last few years and a new building erected, in which the old stone has been reset at an elevation not yet determined by this Department. The elevations given herein, unless otherwise noted, are feet above Barge canal datum, indicated as (B. C. datum), which is the datum used in the construction of the Barge canal by the State of New York.

The United States Engineer Department uses in its work on the Hudson river and Lake Champlain two datum planes. All elevations south, or downstream from and exclusive of the new Federal dam at Troy (1,400 feet north of the old State dam) are referred to an assumed plane of **lowest low water** in the Hudson river at this locality, indicated as (L. L. W.), which is 2.0 feet below the mean sea-level at Sandy Hook, N. J., or 15.863 feet below the elevation of "Greenbush" bench-mark as published in the Annual Report of the United States Coast and Geodetic Survey for 1903, Appendix No. 3. This plane of lowest low water (L. L. W.) is 1.13 feet below Barge canal datum. To reduce lowest low water (L. L. W.) elevations to Barge canal datum (B. C. datum), subtract 1.13 feet.

All elevations used by the United States Engineer Department in connection with the new Federal dam at Troy and north thereof are referred to mean sea-level at Sandy Hook, N. J., indicated as (M. S. L.). Mean sea-level (M. S. L.) at Albany is 0.87 foot above Barge canal datum (B. C. datum), but on Lake Champlain mean sea-level (M. S. L.) is only 0.81 foot above Barge canal datum (B. C. datum).



ER NEAR HADLEY.





Elevations (M. S. L.) at Albany + 0.87 foot = Elevations (B. C. datum).

Elevations (M. S. L.) on Lake Champlain + 0.81 foot = Elevations (B. C. datum).

The volume of water flowing in a stream — the “run-off” or “discharge” — is expressed in various terms, each of which has become associated more or less definitely with a certain class of work. These terms may be divided into two groups — (1) those which represent a rate of flow, as “second-feet,” “gallons per minute,” “gallons per 24 hours,” “miner’s inches” and “run-off in second-feet per square mile,” and (2) those which represent the actual quantity of water, as “run-off in depth in inches,” “million gallons,” “cubic feet,” and “acre-feet.” The units used in this report are “second-feet,” “second-feet per square mile,” “run-off depth in inches” and “million gallons.” They may be defined as follows:

“**Second-foot**” is an abbreviation for cubic foot per second and represents the rate of discharge of water flowing in a channel one square foot in cross-section at a rate of one foot per second. It is generally adopted as the fundamental unit in the measurement of flowing water and is the “natural” unit, as the foot and second are the units used in making the physical determinations. Other units may be computed from this by the use of factors given in the table of equivalents.

“**Second-feet per square mile**” is the average number of cubic feet of water flowing per second from each square mile of area drained, on the assumption that the run-off is distributed uniformly both as regards time and area.

“**Run-off depth in inches**” is the depth to which the drainage area would be covered if all the water flowing from it in a given period were conserved and uniformly distributed over the surface. It is used for comparing run-off with rainfall, which is usually expressed as depth in inches.

## CONVENIENT EQUIVALENTS

The following is a list of convenient equivalents for use in hydraulic computations:

Table for converting discharge in second-foot per square mile into run-off in depth in inches over the area

SEC.-FT. PER Sq. MI.	DEPTH IN INCHES FOR PERIODS INDICATED							Sec.-ft. per sq. mi.
	1 day	28 days	29 days	30 days	31 days	365 days	366 days	
1.....	0.037190	1.041322	1.078512	1.115702	1.152893	13.574380	13.611570	1
2.....	.074380	2.082645	2.157025	2.231405	2.305785	27.148760	27.223140	2
3.....	.111570	3.123967	3.235537	3.347107	3.458678	40.723140	40.834711	3
4.....	.148760	4.165289	4.314050	4.462810	4.611570	54.297521	54.446281	4
5.....	.185950	5.206612	5.392562	5.578512	5.764463	67.871901	68.057851	5
6.....	.223140	6.247934	6.471074	6.694215	6.917355	81.446281	81.669421	6
7.....	.260331	7.289256	7.549587	7.809917	8.070248	95.020661	95.280992	7
8.....	.297521	8.330579	8.628099	8.925620	9.223140	108.595041	108.892562	8
9.....	.334711	9.371901	9.706612	10.041322	10.376033	122.169421	122.504132	9

NOTE.—For partial month, multiply the values for one day by the number of days.

1 second-foot equals 7.49 United States gallons per second; equals 448.8 gallons per minute; equals 646,317 gallons for one day.

1 second-foot for one year covers 1 square mile 1.131 feet, or 13.572 inches, deep.

1 second-foot for one year equals 31,536,000 cubic feet.

1 second-foot for one day equals 86,400 cubic feet.

1,000,000,000 (1 United States billion) cubic feet equals 11,570 second-feet for 1 day.

1,000,000,000 cubic feet equals 414 second-feet for one 28-day month.

1,000,000,000 cubic feet equals 399 second-feet for one 29-day month.

1,000,000,000 cubic feet equals 386 second-feet for one 30-day month.

1,000,000,000 cubic feet equals 373 second-feet for one 31-day month.

1,000,000 United States gallons per day equals 1.55 second-feet.

100 United States gallons per minute equals 0.223 second-foot.



HUDSON RIVER AT SPIER FALLS  
Cable support and gaging car



1 inch deep on 1 square mile equals 2,323,200 cubic feet.

1 inch deep on 1 square mile equals 0.0737 second-foot per year.

1 foot equals 0.3048 meter.

1 mile equals 1.60935 kilometers.

1 mile equals 5,280 feet.

1 acre equals 0.4047 hectare.

1 acre equals 43,560 square feet.

1 acre equals 209 feet square, nearly.

1 square mile equals 2.59 square kilometers.

1 cubic foot equals 0.0283 cubic meter.

1 cubic foot of water weighs 62.5 pounds.

1 cubic meter per minute equals 0.5886 second-foot.

1 horse-power equals 550 foot-pounds per second.

1 horse-power equals 76.0 kilogram-meters per second.

1 horse-power equals 746 watts.

1 horse-power equals 1 second-foot falling 8.80 feet.

$1\frac{1}{3}$  horse-power equals about 1 kilowatt.

To calculate water-power quickly:  $\frac{\text{Sec. ft.} \times \text{fall in feet}}{11} = \text{net horse-power on water-wheel realizing 80 per cent of theoretical power.}$

## ST. LAWRENCE RIVER DRAINAGE

### GENERAL FEATURES

The surface waters of an area of 565,000 square miles in extent pass to the ocean by way of St. Lawrence river. In form this area is an irregular parallelogram extending southwestward for about 900 miles with a fairly uniform breadth of 250 miles. The Great Lakes, into which the river expands, have a water-surface of 95,600 square miles, leaving for the land surface drained by the river about 470,000 square miles. More than eight-tenths of this area belongs to Canada. The remainder constitutes a part of the United States. With the exception of about 50,000 square miles (including the whole of the Gaspé Peninsula) in the eastern part of the Province, the Canadian portion lies wholly on the north side of the river. The only part of the United States lying north of the river is at the west end of Lake Superior.

At its mouth the river and its tributaries are drowned, so that the salt water of the ocean enters to form the broad bay of St. Lawrence, with its irregular margin, and even beyond the bay there is indication of a river valley carved in the continental shelf completely covered by the ocean waters. Upstream from the bay of St. Lawrence the water area narrows and the water freshens, though the tide rises nearly as far as Montreal, where the St. Lawrence is a very broad river with gentle current. Just above Montreal the river becomes a series of violent rapids, and from this point upstream it consists of stretches of quiet water separated by rapids. At the outlet of Lake Ontario the river passes through a maze of islands, beyond which is Lake Ontario — the lowest of the five Great Lakes.

The lakes are connected by broad rivers and straits, which in places are navigable, are elsewhere interrupted by rapids and in one place are broken by one of the great falls of the world — Niagara. To the entire area above the mouth of Lake Ontario no large river is tributary. In places the divide runs close to the lakes and is nowhere far from them.

In the northwestern part of the state of New York, between Niagara and St. Lawrence rivers, is an area aggregating 12,400 square miles drained by streams which flow into Lake Ontario.

**PLATE VII.**



**CHENANGO RIVER. CHENANGO FORKS**  
Shelter for automatic water-stage register





The divide which controls this drainage is very irregular. Extending to the south and southeast from Fort Niagara, it passes around the headwaters of the Genesee a short distance into Pennsylvania; thence reëntering New York it turns southward and eastward taking in the finger lake region, turns to the north, encircles the sources of Black river, turns again to the west and descends to the lake. The country thus included is level or gently undulating in the counties bordering the lake, but farther south it becomes more rolling and a series of ridges, gradually increasing in height, stretch down between Cayuga and Seneca and their companion lakes, finally becoming merged with the elevated, broken country forming the principal divide whose abrupt slopes reach altitudes of 2,000 to 2,500 feet above the headwaters of the Genesee. The easterly or Black river lobe of the drainage basin receives the run-off from the southwestern slope of the Adirondack mountains — largely a rugged and forest-covered area receiving heavy precipitation, especially in the winter. The principal streams of the area are Genesee, Oswego (formed by the union of Seneca and Oneida rivers, which drain the chain of lakes in central New York), Salmon and Black rivers. A small area in the western part of the state is drained by Lake Erie.

St. Lawrence river receives the flow of a number of New York streams having their sources in a northerly slope of the Adirondacks and fed by the numerous lakes with which the region is dotted. Some of these rivers, as the Grass, Raquette and St. Regis, lie entirely within the United States; others, notably Salmon, Trout, Chateaugay and English rivers, cross the international boundary and flow northward into the St. Lawrence in Canada, as does also Richelieu river, the outlet of Lake Champlain. The following table gives a list of the principal tributaries of the St. Lawrence in the United States, with the areas drained by them, determined chiefly from Bien's Atlas of the state of New York.

Drainage areas of ST. LAWRENCE RIVER TRIBUTARIES in the United States

	Square miles		Square miles
Oswegatchie river.....	1,609	Salmon river a.....	273
Grass river.....	637	Trout river b.....	129
Raquette river.....	1,219	Chateaugay river b.....	199
St. Regis river.....	910	English river b.....	53
Little Salmon river a.....	103	Lake Champlain c.....	7,867

a Above junction near international boundary. b At New York state line. c Above outlet.

The St. Lawrence drains, through Lake Champlain, an area of nearly 4,560 square miles in the state of Vermont. This drainage is practically all from Missisquoi, Lamoille and Winooski rivers and Otter creek. Clyde, Barton and Black rivers, in northern Vermont, are tributary to St. Lawrence river through Lake Memphremagog and St. Francis river.

## NIAGARA RIVER DRAINAGE

### GENERAL FEATURES

Niagara river connects Lakes Erie and Ontario. It receives the drainage from Tonawanda creek and adjacent smaller areas in New York.

### NIAGARA RIVER

#### NIAGARA RIVER AT TONAWANDA CREEK, TONAWANDA

This station was established by this Department, January 23, 1905. The gage is located in the mouth of Tonawanda creek just below the right-hand end of the New York Central railroad draw-bridge across Tonawanda creek below the State dam. A staff gage was first used, but on April 8, 1908, an automatic Friez gage, making an eight day graph, was installed. This gage has a range of eight feet, between elevations 565.0 and 573.0. The automatic gage is checked weekly by reading the staff gage. Mean daily water-surface has been taken from the graph to the nearest tenth of a foot.

Daily elevation of water-surface (B. C. Datum) of NIAGARA RIVER AT TONAWANDA CREEK, TONAWANDA, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	566.2	566.9	566.5	566.0	567.1	566.7	567.2	566.9	a
2.....	566.6	567.2	566.4	567.0	567.3	566.4	567.0	567.2	a
3.....	566.7	566.8	566.3	567.1	568.0	566.7	566.6	566.9	a
4.....	566.7	566.6	566.1	566.6	568.1	566.8	566.7	566.9	567.7
5.....	567.1	566.4	566.0	567.1	567.7	566.7	566.8	566.9	567.6
6.....	566.7	566.1	566.1	567.1	567.6	566.5	567.0	567.1	567.2
7.....	566.8	566.0	566.1	566.5	568.3	566.9	566.6	567.0	567.0
8.....	567.4	566.2	566.7	566.5	567.4	567.0	565.8	567.1	567.3
9.....	567.1	566.0	566.3	566.5	567.6	567.6	566.3	567.2	567.3
10.....	566.6	566.1	566.1	566.9	567.6	566.9	566.7	566.9	567.4
11.....	566.7	566.1	565.6	566.7	567.4	566.6	566.7	567.5	567.5
12.....	566.6	566.5	565.3	566.1	567.3	566.4	566.6	567.0	567.5
13.....	566.5	566.9	566.1	567.7	567.6	566.4	566.7	566.8	567.5
14.....	566.6	566.2	566.6	566.6	567.5	565.8	567.0	566.7	567.4
15.....	566.4	566.8	566.5	567.2	567.5	565.9	566.8	566.9	567.4



GENESEE RIVER AT ST. HELENA  
Gurley automatic water-stage register and concrete shelter



Daily elevation of water-surface (B. C. Datum) of NIAGARA RIVER AT TONAWANDA CREEK, TONAWANDA, for the nine months ending June 30, 1916 — *Continued*

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
16.....	566.4	566.7	565.6	567.3	568.0	566.5	566.6	567.1	567.4
17.....	566.5	566.1	565.8	a	567.4	566.4	567.2	567.6	567.5
18.....	566.6	565.8	566.2	a	567.1	566.7	567.1	567.6	567.6
19.....	566.6	566.4	566.7	567.4	566.9	566.8	566.7	567.5	567.5
20.....	566.6	568.1	566.4	567.3	566.6	566.8	566.4	567.3	567.5
21.....	566.7	567.3	565.9	566.6	a	566.6	566.6	567.0	567.4
22.....	566.8	566.8	565.8	566.9	a	566.3	567.1	566.9	567.5
23.....	566.5	566.3	566.3	567.0	a	566.9	566.9	567.2	567.4
24.....	566.5	566.2	566.5	566.7	a	566.5	566.8	567.2	567.4
25.....	566.5	566.1	565.9	566.5	a	a	566.9	567.2	567.6
26.....	566.8	566.1	566.3	566.4	a	a	566.8	567.0	567.4
27.....	566.7	566.8	566.3	566.4	567.3	a	566.8	567.1	567.5
28.....	566.6	566.3	566.1	566.4	567.0	a	566.7	567.3	567.4
29.....	566.8	567.5	565.0	565.9	567.0	566.9	566.9	a	567.3
30.....	566.9	567.0	565.8	566.5	.....	567.2	566.6	a	567.2
31.....	566.6	.....	565.9	566.6	.....	567.2	.....	a	.....

a No record; clock stopped.

## CATTARAUGUS CREEK

### DESCRIPTION

Cattaraugus creek rises in the southwestern part of Wyoming county and flows in a westerly direction, entering Lake Erie about 25 miles southwest of Buffalo, on the boundary line between Erie and Chautauqua counties. The stream is about 55 miles long and drains an area of approximately 560 square miles above the mouth. A large portion of its course forms the boundary between Erie and Chautauqua counties. Its headwaters rise at an elevation of between 1,900 and 2,000 feet. The drainage basin is hilly, fairly well timbered and rather narrow. There are few tributary streams, those of most importance entering the river from the south.

South branch of Cattaraugus creek, which is the largest tributary, enters at a point about two miles above Gowanda. There is a dam at Gowanda which is used for developing electric power and also for running a local grist-mill.

**CATTARAUGUS CREEK AT VERSAILLES**

**Location.**— On a three-span highway bridge in the village of Versailles, Cattaraugus county, about six miles below Gowanda, two and one-quarter miles above the mouth of Clear creek (coming in from the right) and about eight miles above the mouth of the stream.

**Records available.**—September 23, 1910, to June 30, 1916.

**Drainage area.**— Four hundred sixty-seven square miles (measured on post-route map).

**Gage.**— Chain, fastened to the upstream side of the first span from the right-hand end of the bridge; read twice daily to quarter tenths — at about 9 A. M. and 6 P. M. — datum unchanged.

**Control.**— Rock and gravel; occasionally shifting.

**Discharge measurements.**— Made from the downstream side of bridge.

**Winter flow.**— Relation of gage height to discharge affected by ice.

**Extremes of discharge.**— Current period: Maximum stage recorded, 9.7 feet at 2 P. M., March 28; discharge approximately 14,000 second-feet. Minimum stage recorded, 5.1 feet at 8:40 A. M., October 1, discharge, 207 second-feet. Discharge, February 15 to 23, was estimated at 157 second-feet. Discharge relation, affected by ice during this period.

1910–1916: Maximum stage recorded, 11.6 feet at 5:40 P. M., March 25, 1913; discharge, approximately 30,000 second-feet. Minimum stage recorded, 4.65 feet, August 21 and September 6 and 7, 1913; discharge, 55 second-feet.

**Accuracy.**— Discharge curves not well defined. Estimates as published are fair.

**Coöperation.**— Established and maintained by the United States Geological Survey in coöperation with the State Conservation Commission.



OWASCO OUTLET NEAR AUBURN  
Concrete shelter





# GAGING OF STREAMS: NIAGARA RIVER DRAINAGE 27

Discharge measurements of CATTARAUGUS CREEK AT VERSAILLES, during the nine months ending June 30, 1916

DATE	Made by	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>
Feb. 29 a.....	A. H. Davison.....	c 6.91	419
Mar. 29.....	C. S. De Golyer.....	7.72	6,220
Mar. 29.....	C. S. De Golyer.....	7.61	5,670
May 19.....	F. D. Burchard.....	5.95	1,610
May 19.....	E. D. Burchard.....	5.87	1,480
June 15 b.....	E. D. Burchard.....	5.25	522
June 15 b.....	E. D. Burchard.....	5.28	549

a Measurement made under complete ice cover about 500 ft. above gage.

b Measurement made by wading 120 ft. below gage.

c Discharge relation affected by ice.

Daily gage height, in feet, of CATTARAUGUS CREEK AT VERSAILLES, for the nine months ending June 30, 1916. James Palmer, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	5.12	5.18	5.69	5.88	6.3	7.0	7.2	5.55	5.30
2.....	6.1	5.18	5.75	9.6	5.75	7.0	7.0	5.48	5.20
3.....	5.65	5.18	5.68	7.0	5.58	7.0	6.3	5.50	5.22
4.....	5.45	5.22	5.68	6.3	5.55	6.9	6.3	5.70	5.35
5.....	6.75	5.20	5.65	6.5	5.72	6.9	6.0	5.52	5.40
6.....	6.1	5.20	5.65	7.6	5.72	6.9	5.92	5.42	5.32
7.....	6.4	5.18	5.58	6.4	5.68	6.9	5.75	5.35	5.38
8.....	6.05	5.20	5.55	5.80	5.22	7.3	5.72	5.32	5.82
9.....	5.92	5.18	5.55	5.68	5.62	7.0	5.68	5.30	5.62
10.....	6.0	5.20	5.45	5.85	5.82	6.9	5.65	5.25	5.40
11.....	5.65	5.18	5.52	6.1	5.82	6.9	5.62	5.20	5.70
12.....	5.52	5.20	5.52	5.78	5.90	6.6	6.0	5.15	5.68
13.....	5.42	5.18	5.62	6.2	5.88	6.3	6.6	5.12	5.40
14.....	5.32	5.18	5.52	5.75	5.85	5.98	8.6	5.12	5.25
15.....	6.65	5.22	5.38	5.52	5.85	5.88	6.75	5.30	5.22
16.....	5.90	5.42	5.55	5.65	5.85	5.72	6.05	7.2	6.1
17.....	5.58	5.30	5.65	5.42	5.80	5.62	5.92	8.2	5.70
18.....	5.48	5.30	7.2	5.35	5.75	5.55	5.82	6.4	5.62
19.....	6.9	5.68	6.0	5.82	5.75	5.52	5.65	5.92	5.62
20.....	5.98	6.2	6.0	6.0	5.60	5.48	5.65	5.72	5.92
21.....	5.70	6.2	5.75	6.4	5.62	5.42	6.7	5.58	5.65
22.....	5.52	6.0	5.78	7.6	5.72	5.42	8.1	5.48	5.58
23.....	5.38	5.82	5.75	6.35	5.82	5.40	6.6	6.9	5.42
24.....	5.32	5.88	5.95	5.92	5.82	5.38	6.2	5.85	5.32
25.....	5.32	6.05	6.3	5.92	6.1	5.35	5.98	5.72	5.18
26.....	5.25	6.2	6.85	5.95	6.1	6.25	6.3	5.70	5.12
27.....	5.22	6.3	6.2	6.0	6.1	9.1	6.2	5.65	5.10
28.....	5.22	6.15	5.98	6.2	7.0	9.6	6.15	5.70	5.05
29.....	5.22	5.88	5.80	5.92	6.95	8.0	5.88	5.50	5.02
30.....	5.25	5.80	5.58	5.95	.....	7.2	5.62	5.45	5.02
31.....	5.20	.....	5.72	6.0	.....	7.3	.....	5.40	.....

NOTE.— Discharge relation affected by ice, February 9 to March 9, inclusive.

Daily discharge, in second-feet, of CATTARAUGUS CREEK AT VERSAILLES, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1	222	253	702	948	1,610	515	4,310	725	625
2	1,270	253	790	13,300	790	515	3,670	648	522
3	675	253	702	3,260	402	515	1,890	670	551
4	468	286	702	1,610	568	422	1,890	900	680
5	2,600	268	675	2,020	760	422	1,330	692	738
6	1,270	268	675	5,210	760	422	1,200	582	625
7	1,810	253	594	1,810	702	422	965	510	690
8	1,200	268	568	850	286	422	926	490	1,270
9	1,020	253	568	702	268	515	876	460	965
10	1,120	268	468	915	238	2,980	840	416	703
11	675	253	541	1,270	222	2,980	804	375	1,050
12	541	268	541	820	194	2,240	1,330	325	1,020
13	445	253	648	1,430	182	1,610	2,570	312	680
14	360	253	541	790	170	1,080	9,600	312	522
15	2,360	286	402	541	157	948	2,960	460	493
16	980	445	568	675	157	760	1,420	4,310	1,710
17	594	340	675	445	157	648	1,200	8,860	1,050
18	492	340	3,870	381	157	568	1,060	2,600	946
19	2,980	702	1,120	882	157	541	840	1,520	946
20	1,080	1,430	1,120	1,120	157	492	840	1,220	1,380
21	730	1,430	790	1,810	157	445	2,830	1,020	985
22	541	1,120	820	5,210	157	445	7,610	895	895
23	402	882	790	1,710	157	422	2,570	3,880	703
24	360	948	1,050	1,020	182	402	1,680	1,380	592
25	360	1,200	1,610	1,020	340	381	1,300	1,190	456
26	304	1,430	2,850	1,050	360	1,520	1,890	1,160	404
27	286	1,610	1,430	1,120	381	11,100	1,680	1,080	386
28	286	1,350	1,080	1,430	422	13,600	1,600	1,160	848
29	286	948	850	1,020	468	7,220	1,140	858	325
30	304	850	594	1,050	.....	4,310	804	795	325
31	268	.....	790	1,120	.....	4,650	.....	738	.....
Mean	848	632	939	1,820	370	2,050	2,120	1,310	753

NOTE.—Discharge relation affected by ice, February 9 to March 9, inclusive. Daily discharge given in this period is approximate. A new rating was used, March 29 to May 16, and second new rating was used, commencing June 11. A sliding correction between these ratings was used, May 17 to June 10, inclusive.

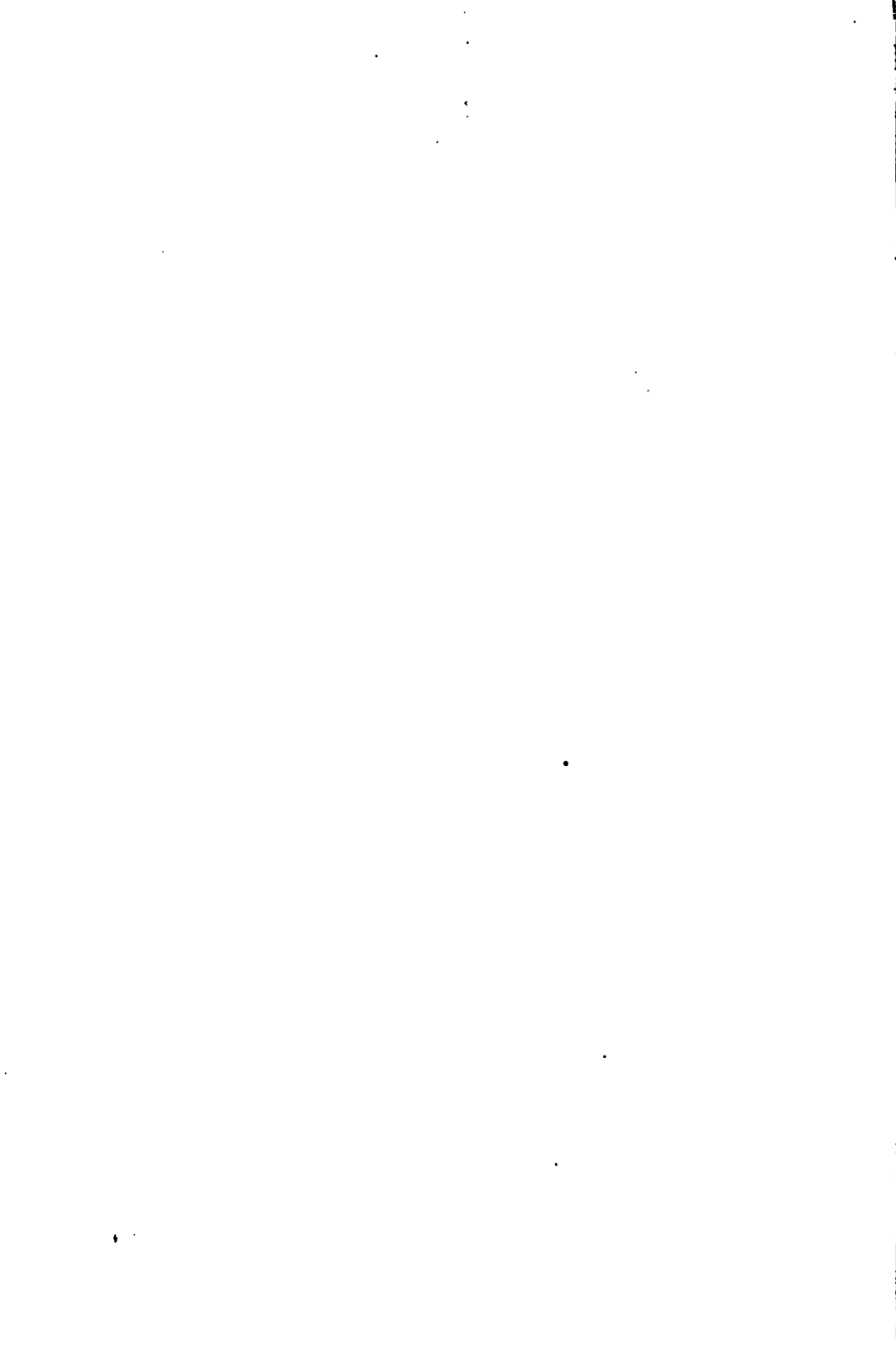
Monthly discharge of CATTARAUGUS CREEK AT VERSAILLES, for the nine months ending June 30, 1916

[Drainage area, 467 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF Depth in inches on drainage area	Accuracy
	Maximum	Minimum	Mean	Per square mile		
October	2,980	222	848	1.82	2.10	B
November	1,610	253	632	1.35	1.51	B
December	3,870	402	939	2.01	2.32	B
January	13,300	381	1,820	3.90	4.50	C
February	1,610	157	370	0.792	0.85	C
March	13,600	381	2,050	4.39	5.06	C
April	9,600	804	2,120	4.54	5.06	C
May	8,860	312	1,310	2.81	3.24	C
June	1,710	325	753	1.61	1.80	C



STANDARD VERTICAL STAFF GAGE, STATE ENGINEER'S DEPARTMENT  
Method of erection where gage for low water cannot be extended to give  
high-water readings.



## TONAWANDA CREEK

## DESCRIPTION

Tonawanda creek rises in Wyoming county and flows northward into Genesee county. At Batavia it turns abruptly to the west and continues in that direction until it reaches the Niagara river at Tonawanda. After passing out of Genesee county it forms the boundary between Niagara county and Erie county.

Tonawanda creek rises in a rather hilly country and, in the upper part of its basin, flows through a rather narrow valley. Its main tributary is Little Tonawanda creek, which flows into the stream from the right about 3 miles south of Batavia.

Between Pendleton and Tonawanda the creek and the Erie canal are coincident, the creek leaving the canal over the State dam at Tonawanda. Water for canal purposes is passed eastward in the canal from Tonawanda creek and Lake Erie.

## ERIE CANAL AT CHANGE BRIDGE, PENDLETON

This station is located at change bridge over the Erie canal at its junction with Tonawanda creek about one-half mile southwest of Pendleton. The gage is a staff secured to a crib of the old tow-path bridge. It is read once daily — at 5 P. M.

Daily elevation of water-surface (B. C. Datum) of ERIE CANAL AT CHANGE BRIDGE, PENDLETON, for the nine months ending June 30, 1916. Homer Snell, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	570.0	570.0	570.2	570.9	569.0	567.4	575.5	567.5	571.1
2.....	570.4	570.2	569.2	573.0	568.6	567.4	573.0	567.5	571.3
3.....	570.7	570.0	569.1	573.1	568.6	567.4	571.0	567.5	574.5
4.....	570.8	569.2	570.0	573.0	568.3	567.4	569.3	568.4	575.0
5.....	571.1	569.5	570.8	574.0	568.3	567.4	568.5	568.8	574.5
6.....	570.8	569.4	570.6	574.1	568.4	567.4	568.0	570.0	573.1
7.....	571.3	569.4	570.6	573.8	569.2	567.5	566.9	569.4	571.9
8.....	571.5	569.5	570.5	571.0	568.3	567.5	566.8	569.0	571.2
9.....	571.2	569.8	570.6	570.0	568.2	567.8	567.0	569.3	571.5
10.....	571.2	569.8	570.8	569.0	568.2	567.6	567.5	569.3	571.6
11.....	570.8	569.8	570.5	568.6	568.1	567.5	567.3	569.5	571.9
12.....	570.6	569.9	570.6	568.4	568.1	567.4	567.0	569.6	571.2
13.....	570.3	570.6	570.5	569.8	567.6	567.4	568.2	570.8	571.0
14.....	570.2	570.0	570.7	569.0	567.4	567.2	569.5	571.0	570.7
15.....	570.0	570.3	570.4	568.6	567.7	567.2	569.1	570.8	570.3
16.....	570.1	570.4	569.8	568.5	568.5	567.2	569.0	571.0	570.8
17.....	570.5	570.0	569.7	568.4	567.7	567.2	568.7	572.0	571.0
18.....	570.5	570.1	570.4	568.4	567.4	567.2	567.8	573.5	571.4
19.....	570.6	570.4	570.3	568.2	567.4	567.1	567.1	574.0	571.2
20.....	570.6	571.3	570.9	568.2	567.4	567.0	566.9	572.5	571.2
21.....	570.7	570.9	570.8	568.3	567.4	566.9	567.1	571.3	571.0
22.....	570.6	570.6	570.5	568.8	567.5	566.9	569.7	570.2	571.0
23.....	570.0	570.6	570.4	569.2	567.6	566.9	571.0	571.2	571.1
24.....	570.0	570.4	571.1	569.5	567.6	566.9	571.2	571.6	571.1
25.....	570.0	570.5	571.5	569.0	567.6	566.9	569.5	571.3	571.6

Daily elevation of water-surface (B. C. Datum) of ERIE CANAL AT CHANGE BRIDGE,  
PENDLETON, for the nine months ending June 30, 1916 — *Continued*

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
26.....	570.2	570.2	571.7	568.2	567.7	567.0	568.7	571.0	571.6
27.....	570.0	570.8	571.9	568.2	567.8	568.0	569.4	570.8	570.8
28.....	569.8	570.7	571.6	568.6	567.6	574.2	568.5	571.0	570.8
29.....	569.8	571.0	571.0	568.2	567.4	580.0	568.3	571.0	570.9
30.....	570.2	570.3	570.9	568.1	.....	580.2	567.5	571.2	570.8
31.....	570.8	.....	570.8	568.5	.....	579.0	.....	571.2	.....

NOTE.— Dam at Tonawanda failed partially, January 7, 10:00 A. M. to 1:00 P. M.

### ERIE CANAL ABOVE STATE DAM, TONAWANDA

This station is located just above the State dam over which Tonawanda creek leaves the Erie canal at North Tonawanda. The gage is a staff secured to docking near the middle pier of the Main-Delaware street bridge. It is read once daily — generally at 8:30 A. M.

Daily elevation of water-surface (B. C. Datum) of ERIE CANAL ABOVE STATE DAM  
AT TONAWANDA, for the nine months ending June 30, 1916. C. Kumro, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	570.2	570.8	569.8	*	569.1	567.4	571.0	567.2	571.3
2.....	570.5	570.7	569.7	*	568.8	566.8	*	567.6	571.3
3.....	*	570.7	570.0	572.9	568.4	567.1	568.4	567.3	573.1
4.....	570.9	570.1	570.3	572.3	568.4	567.4	567.4	568.3	574.1
5.....	571.2	570.2	*	572.7	567.7	*	567.4	568.1	573.8
6.....	571.1	569.9	570.7	573.0	*	567.0	567.5	570.3	573.3
7.....	571.1	*	571.0	574.2	568.5	567.5	567.4	*	572.3
8.....	571.6	569.6	571.1	570.3	567.8	567.8	566.5	569.8	571.4
9.....	571.6	569.7	570.8	569.0	567.8	567.3	*	569.2	571.5
10.....	*	569.9	570.9	568.2	567.6	567.8	567.5	569.6	571.4
11.....	571.1	569.9	570.9	568.2	567.5	567.2	567.3	569.8	*
12.....	571.1	570.2	*	567.8	567.6	*	567.2	570.5	571.3
13.....	570.7	570.7	570.9	569.4	*	567.9	567.6	571.0	571.2
14.....	570.6	*	570.8	568.0	567.8	566.8	568.5	*	570.9
15.....	570.5	570.2	570.6	567.9	567.6	566.7	568.8	571.2	570.4
16.....	570.5	570.3	569.8	*	568.1	567.2	*	570.7	570.8
17.....	*	570.1	569.5	568.5	567.5	567.4	568.0	571.8	571.1
18.....	570.9	570.2	570.1	568.4	567.2	567.3	567.9	572.8	*
19.....	570.9	570.2	*	568.8	567.3	*	567.3	573.3	571.5
20.....	570.8	571.5	571.1	567.4	*	567.0	566.8	572.8	571.3
21.....	570.8	*	570.9	566.7	567.2	566.8	567.8	*	571.3
22.....	571.0	571.0	571.1	568.2	567.2	566.8	568.5	571.0	571.2
23.....	570.9	571.0	570.8	*	567.1	567.3	*	571.1	571.3
24.....	*	570.8	570.9	568.8	567.1	567.3	569.3	572.0	571.1
25.....	570.3	570.6	*	568.5	567.1	567.0	568.5	571.6	*
26.....	570.4	570.6	*	568.3	567.5	*	568.0	571.2	571.5
27.....	570.5	570.1	571.9	567.9	*	568.3	568.3	570.8	571.1
28.....	570.1	*	570.6	568.4	567.5	571.3	567.9	*	570.9
29.....	570.2	571.2	571.0	568.2	567.4	572.8	567.6	571.1	570.9
30.....	570.4	570.4	571.0	*	.....	574.2	*	*	570.8
31.....	*	.....	570.8	568.0	.....	572.3	.....	571.1	.....

\* Sunday. a No record.

NOTE.— Dam failed partially, January 7, 10:00 A. M. to 1:00 P. M. April 29, 1915, elevation should be 571.10 not 570.10, Report of State Engineer, 1915, Vol. II, p. 31.

## . LITTLE TONAWANDA CREEK

## LITTLE TONAWANDA CREEK AT LINDEN

**Location.**—At the stone arch highway bridge in the village of Linden, Genesee county, 600 feet northeast of Erie Railroad station, and 3 miles above junction with Tonawanda creek.

**Records available.**—July 8, 1912, to June 30, 1916.

**Drainage area.**—22.0 square miles. (Measured on United States Geological Survey topographic maps.)

**Gage.**—Vertical staff on right-hand upstream abutment of bridge; lower 2 feet of enameled iron graduated to hundredths of a foot; upper 4 feet of bronze graduated to half-tenths. Gage read twice daily, to hundredths.

**Control.**—A standard Francis weir has been constructed under the upstream side of the bridge, having a length of 2.01 feet and a height of 8 inches. When the water overtops this weir it flows over a 2-inch plank about 13 feet long, including the 2 feet of weir. The weir was carried away by a floating tree on March 25, 1913, and was duplicated June 20, 1913.

**Discharge measurements.**—High-water measurements made from a cable and car 1,000 feet above weir; low-water measurements made by wading above weir.

**Extremes of discharge.**—Current period: Maximum stage recorded, 14.6 feet during the early morning of April 22, determined by leveling from a reference point; discharge, approximately 2,400 second-feet. Minimum stage recorded, 0.41 foot at 8:30 A. M., October 1; discharge, 1.56 second-feet.

1912–1916: Maximum stage recorded, 14.6 feet during the early morning of April 22, 1916, determined by leveling from a reference point; discharge, approximately 2,400 second-feet. Minimum stage recorded, 0.18 foot, August 20 and 21, September 14 to 16, inclusive, and October 8, 1913; discharge, 0.43 second-foot.

**Accuracy.**—At gage height 0.69, or below, flow is confined to weir. During such stages the accuracy of the data will be the accuracy of a properly constructed Francis weir. For stages above gage height, 0.69, weir has been rated with a current-meter, and data for such stages should also be excellent.

**Coöperation.**—Established and maintained by the United States Geological Survey in coöperation with the State Conservation Commission.



Discharge measurements of LITTLE TONAWANDA CREEK AT LINDEN, during the nine months ending June 30, 1916

DATE	Made by	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>
Mar. 30.....	C. S. De Golyer.....	4.56	354
April 27 a.....	E. D. Burchard.....	3.24	206
April 27 a.....	F. D. Burchard.....	3.28	214
June 16 b.....	E. D. Burchard.....	1.92	79.8
June 16 b.....	E. D. Burchard.....	1.90	74.5

a Measurement made by wading  $\frac{1}{2}$  mile above gage.

b Measurement made by wading 1,000 ft. above gage.

Daily gage height, in feet, of LITTLE TONAWANDA CREEK AT LINDEN, for the nine months ending June 30, 1916. C. I. Schenck, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	0.42	0.71	0.98	1.6	1.5	.88	4.1	1.28	1.00
2.....	1.05	.68	1.00	6.8	1.18	.87	2.9	1.24	3.1
3.....	.92	.63	.98	2.15	1.02	.86	2.2	1.30	3.8
4.....	.80	.64	.96	1.75	.96	.85	1.95	1.36	1.95
5.....	1.14	.73	.94	3.7	.94	.84	1.85	1.20	1.35
6.....	1.00	.74	.91	2.4	.96	.83	1.7	1.10	1.43
7.....	.83	.70	.91	1.6	.85	.94	1.48	1.06	1.26
8.....	.83	.68	.90	1.29	.92	1.06	1.42	1.18	1.5
9.....	.80	.66	.89	1.19	.90	1.06	1.44	1.08	1.35
10.....	.84	.62	1.00	1.28	.88	.94	1.48	1.00	1.17
11.....	.80	.62	.92	1.36	.88	1.10	1.55	.96	2.6
12.....	.74	.62	.92	1.21	.88	1.08	1.9	.88	1.7
13.....	.68	.63	.92	1.65	.88	1.10	2.45	.85	1.32
14.....	.64	.62	.87	1.20	.88	1.18	4.6	.84	1.14
15.....	1.06	.73	.90	1.09	.86	1.09	2.15	1.15	1.26
16.....	.92	.82	.90	1.06	.87	1.10	1.65	7.0	1.42
17.....	.86	.77	.93	1.00	.88	1.04	1.6	3.8	2.25
18.....	.80	.76	2.3	.94	.87	1.04	1.38	2.35	1.45
19.....	1.11	.86	1.6	.94	.85	1.03	1.24	1.7	1.55
20.....	.97	1.08	1.26	.94	.84	1.01	1.24	1.5	1.6
21.....	.88	1.20	1.24	2.1	.82	1.00	1.85	1.28	1.40
22.....	.82	1.10	1.17	3.4	.84	.99	5.2	2.05	1.25
23.....	.78	1.05	1.18	1.6	.84	.97	2.9	2.5	1.10
24.....	.76	1.02	1.23	1.44	.82	.96	2.2	1.55	1.04
25.....	.75	1.04	2.25	1.21	.88	1.02	2.1	1.26	1.04
26.....	.74	1.42	2.00	1.4	.86	1.37	2.3	1.12	.94
27.....	.70	1.36	1.55	1.75	.84	5.2	3.0	1.24	.89
28.....	.69	1.26	1.89	1.7	.82	8.4	1.9	1.27	.85
29.....	.68	1.11	1.27	1.20	.88	5.4	1.5	1.08	.84
30.....	.73	1.03	1.46	1.19	.....	4.6	1.37	1.34	.83
31.....	.74	.....	1.24	1.75	.....	4.2	.....	1.15	.....

NOTE.— Discharge relation not affected by ice.

# GAGING OF STREAMS: NIAGARA RIVER DRAINAGE 33

Daily discharge, in second-feet, of LITTLE TONAWANDA CREEK AT LINDEN, for the  
nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1	1.62	3.7	11	51	43	7.8	316	26	12
2	14	3.36	12	770	20	7.5	164	24	167
3	9.0	3.00	11	95	13	7.2	99	28	274
4	5.6	3.07	10	63	10	6.9	79	32	79
5	18	4.1	9.7	261	9.7	6.6	71	21	71
6	12	4.2	8.7	117	10	6.4	59	16	87
7	7.8	3.6	8.7	51	6.9	9.7	41	14	25
8	6.4	3.36	6.4	27	9.0	14	37	20	43
9	5.6	3.21	8.1	21	8.4	14	38	15	31
10	6.6	2.93	8.4	26	7.8	9.7	41	12	20
11	5.6	2.93	9.0	32	7.8	16	47	10.4	135
12	4.2	2.93	9.0	22	7.8	15	75	7.8	59
13	3.36	3.00	9.0	55	7.8	16	122	6.9	29
14	3.07	2.93	7.5	21	7.8	20	390	6.6	18
15	15	4.1	8.4	16	7.2	16	95	19	25
16	9.0	6.1	8.4	14	7.5	16	55	810	37
17	7.2	4.9	9.4	12	7.8	13	51	274	104
18	5.6	4.6	108	9.7	7.5	13	34	112	39
19	17	7.2	51	9.7	6.9	18	24	59	47
20	11	15	25	9.7	6.6	12	24	43	51
21	7.8	21	24	91	6.1	12	71	26	85
22	6.1	16	20	223	6.6	11	484	57	24
23	5.1	14	20	51	6.6	11	164	126	16
24	4.6	13	23	38	6.1	10	90	47	13
25	4.4	13	104	22	7.8	13	91	25	18
26	4.2	37	83	35	7.2	33	108	17	9.7
27	3.6	32	47	63	6.6	484	175	26	8.1
28	8.5	25	84	59	6.1	1,090	75	26	6.9
29	3.36	17	26	21	7.8	516	43	15	6.6
30	4.1	13	40	21	.....	390	33	30	6.4
31	4.2	.....	24	63	.....	330	.....	19	.....
Mean	7.04	9.64	25.4	76.5	9.43	101	107	64.5	48.7

NOTE.— Discharge relation not affected by ice.

Monthly discharge of LITTLE TONAWANDA CREEK AT LINDEN, for the nine months  
ending June 30, 1916

[Drainage area, 22.0 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF Depth in inches on drainage area	Accu- racy
	Maximum	Minimum	Mean	Per square mile		
October	18	1.62	7.04	0.320	0.37	A
November	37	2.93	9.64	0.438	0.49	A
December	108	7.5	25.4	1.15	1.38	A
January	770	9.7	76.5	3.48	4.01	B
February	48	6.1	9.43	0.429	0.46	B
March	1,090	6.4	101	4.59	5.29	C
April	484	24	107	4.87	5.43	B
May	810	6.6	61.5	2.93	8.38	B
June	274	6.4	48.7	2.21	2.47	A

**GENESEE RIVER DRAINAGE BASIN****GENESEE RIVER****DESCRIPTION**

Genesee river rises in Potter county, Pa., 8 or 10 miles south of the New York-Pennsylvania boundary, flows northwestward for about 32 miles by general course, then turns to the northeast and empties into Lake Ontario, 7 miles north of Rochester. The entire length of the stream, following bends, is about 135 miles and the drainage area is about 2,450 square miles.

In the 39 miles between Belmont, in central Allegany county, and Portage, in southwestern Livingston county, the fall of the water-surface is 253 feet, an average of 6.4 feet per mile. At Portage the river plunges down in three magnificent falls and thence nearly to Mount Morris flows at the bottom of a deep gorge. From Mount Morris to Rochester the valley is broad and open and the stream is bordered by meadows subject to occasional overflow. At Rochester there is another abrupt descent over three heavy falls, amounting to about 260 feet within the city.

In the northern counties the surface is rolling, with long, easy slopes, except along the streams, which usually lie in deep ravines, hemmed in by steep banks. On the whole there is a gradual rise away from the lakes and in the upper half of the basin the country becomes rough and is broken by ridges, the summits of which attain elevations of from 2,000 to 2,500 feet above tide.

Precipitation is rather low, the average rainfall being about 35 inches, some 14 inches smaller than that of the upper Sacandaga.

Above all the private dams at Rochester the State formerly maintained a dam for diverting water to the Erie canal, and in the basin of Black creek, one of the upper tributaries of the Genesee from the west, are two reservoirs (Rockville and Cuba reservoirs), owned by the State, also used for the benefit of the Erie canal.

Cuba reservoir, on the Genesee-Allegheny divide, receives the drainage from a tributary area of 26.6 square miles. The storage volume is 454,000,000 cubic feet. The overflow from this reservoir enters Allegheny river. The storage water may be turned into the summit level of the abandoned Genesee Valley canal and thence into Genesee river.

The series of remarkable lakes tributary to the Oswego basin is continued westward into the basin of the Genesee and includes Conesus, Hemlock, Canadice, and Honeoye lakes. These lakes serve as natural reservoirs and have inlets draining considerable areas at their upper ends. The slopes adjacent to the lakes themselves are narrow and steep and are drained by gullies and torrential brooks. The area below the lakes is rolling and the soil is rich and extensively cultivated. The areas and elevations of these lakes are shown in the following table:

Areas and elevation of LAKES IN GENESEE RIVER BASIN <sup>a</sup>

LAKE	Elevation	Water-surface area	Drainage area	Per cent water-surface
	<i>Feet</i>	<i>Square miles</i>	<i>Square miles</i>	
Hemlock lake.....	896	2.8	46.8	5.98
Canadice lake.....	1,092	1.0	12.6	7.94
Honeoye lake.....	800	2.5	39.6	6.31

<sup>a</sup> These lake basins are shown on the Honeoye, Canandaigua, Naples and Wayland topographic atlas sheets of the United States Geological Survey, from which the area of Honeoye lake has been taken. Areas of Hemlock and Canadice lakes are from surveys of the Rochester water-works.

Drainage areas of tributaries of GENESEE RIVER <sup>a</sup>

NAME OF STREAM	AREA IN SQUARE MILES		
	Tributary	GENESEE RIVER	
		Above tributary	Below tributary
Cryder creek.....	43.3	99.9	143.2
Chenunda creek.....	30.0	181.0	211.0
Dyke's creek.....	68.3	214.0	282.3
Vandemark creek.....	21.6	301.3	322.9
Knight's creek.....	22.3	323.9	346.2
Phillips creek.....	32.3	372.8	405.1
Vancampens creek.....	55.7	410.4	466.1
Angelica creek.....	82.1	481.1	563.2
White creek.....	15.9	569.2	585.1
Black creek (Allegany county).....	31.1	595.5	626.6
Crawford creek.....	11.8	637.6	649.4
Canadice creek.....	63.3	651.0	714.3
Cold creek.....	41.0	745.3	786.3
Rush creek.....	35.3	787.0	822.3
Wiscoy creek (including East Koy creek).....	108.6	833.6	942.2
East Koy creek.....	59.9		
Wolf creek.....	19.3	974.9	994.2
Silver lake outlet.....	30.4	1,029.2	1,059.6
Canaseraga creek, Livingston Co. (including Keshequa creek)	340.7	1,066.4	1,407.1
Keshequa creek (formerly Coahaqua).....	82.0		
Beards creek.....	41.3	1,423.1	1,464.4
Conesus lake outlet.....	88.8	1,555.5	1,643.9
Honeoye creek.....	262.6	1,675.9	1,938.5
Allen's creek.....	198.1	1,947.1	2,145.2
Black creek (Monroe county).....	211.8	2,168.5	2,380.0
Genesee river, total at mouth.....			2,445.6

<sup>a</sup> From an early report on Genesee river storage, Report of State Engineer, 1890, plate facing p. 422.

## GENESEE RIVER AT SCIO

**Location.**—At the steel highway bridge,  $\frac{1}{2}$  mile above the village of Scio, Allegany county,  $\frac{1}{4}$  mile above Vandemark creek and 1 mile above Night.

**Records available.**—June 12 to 30, 1916.

**Drainage area.**—Not measured.

**Gage.**—Vertical staff, attached to downstream face of left abutment; read twice daily to half-tenths.

**Control.**—Coarse gravel and probably permanent.

**Discharge measurements.**—Made from the downstream side of the bridge at medium and high stages and by wading at low stages.

**Winter flow.**—Discharge relation probably affected by ice.

**Accuracy.**—Rating curve not yet complete. No discharge estimates published.

**Coöperation.**—Established and maintained by the United States Geological Survey in coöperation with the State Conservation Commission.

Discharge measurements of GENESEE RIVER AT SCIO, during the nine months ending June 30, 1916

DATE	Made by	Gage height	Discharge
		Feet	Sec.-ft.
June 12.....	E. D. Burchard.....	2.31	953
June 14 a.....	E. D. Burchard.....	2.00	595
June 14 a.....	E. D. Burchard.....	1.93	562
June 20.....	E. D. Burchard.....	3.62	1,900
June 20.....	E. D. Burchard.....	3.43	1,700
June 20.....	E. D. Burchard.....	3.27	1,560

a Measurement made by wading 300 feet below gage.

Daily gage height, in feet, of GENESEE RIVER AT SCIO, for the nine months ending June 30, 1916. Raymond Sisson, Observer

DAY	June	DAY	June	DAY	June
1.....		11.....		21.....	3.07
2.....		12.....	2.38	22.....	2.96
3.....		13.....	2.20	23.....	2.37
4.....		14.....	1.97	24.....	2.19
5.....		15.....	1.99	25.....	2.52
6.....		16.....	2.67	26.....	1.97
7.....		17.....	8.2	27.....	1.80
8.....		18.....	4.6	28.....	2.48
9.....		19.....	3.8	29.....	1.79
10.....		20.....	3.45	30.....	1.68
				31.....	.....

## GENESEE RIVER AT ST. HELENA

**Location.**—At the steel highway bridge in the village of St. Helena, Wyoming county, about 6 miles above the mouth of Silver Lake outlet,  $9\frac{1}{2}$  miles above Canaseraga creek, and  $5\frac{1}{2}$  miles below the village of Portageville and the site of the proposed storage dam of the Conservation Commission.

**Records available.**—August 14, 1908, to June 30, 1916.

**Drainage area.**—1,030 square miles. (From United States Geological Survey water-supply papers.)

**Gage.**—Chain, fastened to the upstream side of the bridge, middle span; read at about 7 A. M. and 6 P. M. daily to hundredths. Since August 24, 1911, an automatic water-stage recorder, with intake pipe to the well a few feet downstream from the chain gage. Datum same as chain gage, but slope of water-surface makes reading different. Water-stage recorder indicates gage heights to hundredths.

**Control.**—Gravel and rocks; occasionally shifting.

**Discharge measurements.**—At high stages, made from the bridge; at low and medium stages, made either by wading or from the bridge.

**Winter flow.**—Relation between gage height and discharge usually but slightly affected by ice; determination of winter discharge considered good when frequent discharge measurements are made.

**Extremes of discharge.**—Current period: Maximum stage from water-stage recorder, 12.81 feet at 8 A. M., May 17; discharge, approximately 43,500 second-feet. Minimum stage from water-stage recorder, 2.46 feet, at 6:45 A. M., October 1; discharge, 188 second-feet.

1908–1916: Maximum stage from water-stage recorder, 12.81 feet at 8 A. M., May 17, 1916; discharge, approximately 43,500 second-feet. Minimum stage recorded, 1.70 feet at 5 P. M., October 5, and 8 A. M., October 17, 1913; discharge, approximately 18 second-feet.

**Accuracy.**—Discharge rating curve well defined. Conditions for meter measurements good. Gage heights from automatic gage eliminate error from diurnal fluctuations in flow due to operation of mill above the station.

**Coöperation.**—Established and maintained by the United States Geological Survey in coöperation with the State Conservation Commission.

**Discharge measurements of GENESSEE RIVER AT ST. HELENA, during the nine months  
ending June 30, 1916**

DATE	Made by	GAGE HEIGHT		Discharge
		Chain	Auto- matic	
		<i>Feet</i>	<i>Feet</i>	<i>Sec.-ft.</i>
Jan. 21 a.....	O. W. Hartwell.....	3.39	3.38	728
Feb. 15 b.....	C. S. De Golyer.....	4.05	4.00	455
Feb. 26 c.....	A. H. Davison.....		5.13	571
Mar. 16 d.....	C. S. De Golyer.....	5.50	5.48	326
Mar. 28.....	C. S. De Golyer.....	10.12	10.17	A 28, 100
April 1.....	C. S. De Golyer.....	8.55	8.65	14,600
April 13.....	C. S. De Golyer.....	7.11	7.11	8,170
April 22.....	C. S. De Golyer.....	10.15	10.29	24,400
April 28.....	E. D. Burchard.....		6.08	4,940
April 28.....	E. D. Burchard.....		5.98	4,670
May 11 e.....	E. D. Burchard.....		3.62	797
May 11 e.....	E. D. Burchard.....		3.61	763

a Measurement made under complete ice cover, downstream side of bridge.

b Measurement made under partial ice cover, downstream side of bridge.

c Measurement made under complete ice cover, 25 feet below bridge.

d Measurement made under complete ice cover, 200 feet below gage.

e Measurement made by wading 250 feet below gage.

f Discharge relation affected by ice.

h Discharge measured by 0.2 depth method, coefficient 0.85.

**Daily gage height, in feet, of GENESSEE RIVER AT ST. HELENA, for the nine months  
ending June 30, 1916. Herman Piper, Observer**

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	2.54	2.94	3.52	3.92	5.00	5.15	9.2	4.65	3.81
2.....	4.18	2.88	3.41	6.8	4.37	5.05	8.6	4.39	3.65
3.....	3.78	2.86	3.36	7.3	3.79		7.0	4.25	4.75
4.....	3.31	2.92	3.31	6.9	3.24		6.6	4.65	5.85
5.....	5.65	2.91	3.24	7.2	3.29		5.95	4.35	5.0
6.....	4.95	2.95	3.15	8.1	3.49		5.75	4.12	4.6
7.....	4.18	2.92	3.09	5.8	3.29	5.55	5.3	3.98	4.29
8.....	3.88	2.87	3.07	4.8	2.90	5.75	5.15	3.88	5.6
9.....	3.59	2.84	3.05	4.38	2.91	6.00	5.0	3.81	5.1
10.....	3.54	2.84	2.92	4.27	3.07	6.05	4.8	3.71	5.0
11.....	3.36	2.80	2.94	4.30	3.12	5.85	5.0	3.61	5.45
12.....	3.16	2.85	2.83	4.02	3.01	5.75	6.0	3.48	5.45
13.....	3.03	2.94	3.01	4.32	2.97	5.55	6.9	3.37	4.85
14.....	2.94	2.01	2.94	3.77	3.19	5.55	8.4	3.30	4.49
15.....	5.00	2.87	2.76	3.30	4.03	5.6	7.8	3.45	4.45
16.....	4.65	3.20	2.81	3.33	4.26	5.85	6.05	7.9	6.45
17.....	4.03	3.21	3.02	3.05	4.23	6.25	5.45	11.0	7.1
18.....	3.76	3.19	4.7	3.37	4.14		5.25	6.9	7.4
19.....	4.30	3.46	5.05		4.44	6.05	4.85	5.75	6.15
20.....	4.30	4.6	4.24		4.7	6.05	4.65	5.25	6.5
21.....	4.22	4.48	3.77	3.57	4.75	6.05	6.2	4.8	5.55
22.....	3.92	4.6	3.65	5.05	5.1	6.05	9.7	4.5	5.5
23.....	3.67	2.18	3.63	5.00		6.05	7.8	6.35	4.9
24.....	3.47	3.97	3.54	4.12		6.45	6.55	5.25	4.6
25.....	3.32	3.81	3.86	3.87		6.6	5.85	4.7	4.6
26.....	3.24	4.08	5.75	3.79	5.15	6.7	6.25	4.6	4.39
27.....	3.16	2.85	4.65	4.23	5.15	8.2	6.45	4.33	4.05
28.....	3.09	4.6	4.29	5.05	5.1	10.3	6.1	4.5	3.95
29.....	3.01	4.01	3.83	4.55	5.2	9.9	5.35	4.34	4.13
30.....	2.98	3.72	3.45	3.98		9.4	4.95	4.10	3.73
31.....	2.97		3.75	4.18		9.6		4.00	

NOTE.— Discharge relation affected by ice, January 15 to 21 and February 9 to March 27, both inclusive.

Daily discharge, in second-feet, of GENESEE RIVER AT ST. HELENA, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	219	443	932	1,420	3,440	568	17,700	2,000	970
2.....	1,820	402	820	8,360	2,150	530	14,500	1,640	815
3.....	1,230	389	774	10,000	1,240	485	7,750	1,460	2,160
4.....	729	429	729	8,680	672	471	6,410	2,000	4,330
5.....	5,020	422	672	9,680	712	443	4,580	1,580	2,560
6.....	3,320	450	600	12,800	900	426	4,090	1,300	1,930
7.....	1,820	429	552	5,420	712	436	3,110	1,150	1,510
8.....	1,360	396	538	3,000	415	680	2,820	1,020	3,740
9.....	1,010	376	522	2,160	350	1,020	2,560	970	2,740
10.....	954	376	429	1,970	334	1,020	2,220	870	2,560
11.....	774	350	443	2,020	300	860	2,560	779	3,420
12.....	608	382	370	1,570	295	720	4,700	676	3,420
13.....	608	443	492	2,060	295	624	7,400	602	2,310
14.....	443	492	443	1,210	344	584	13,500	560	1,780
15.....	3,440	396	328	720	478	568	10,800	655	1,720
16.....	2,690	640	356	508	640	600	4,830	11,300	5,950
17.....	1,580	648	800	450	616	624	3,420	29,000	8,100
18.....	1,200	632	2,790	429	552	640	3,020	7,400	10,600
19.....	2,020	870	3,560	429	485	624	2,310	4,090	6,180
20.....	2,020	2,590	1,920	471	457	624	2,000	3,020	7,270
21.....	1,880	2,350	1,210	910	443	632	5,230	2,230	4,520
22.....	1,420	2,290	1,080	3,560	450	640	20,600	1,790	4,400
23.....	1,100	1,820	1,050	3,440	464	640	10,800	5,660	3,040
24.....	880	1,500	954	1,720	485	1,020	6,260	3,020	2,460
25.....	738	1,260	1,330	1,350	552	1,250	4,330	2,080	2,460
26.....	672	1,660	5,280	1,240	568	1,390	5,370	1,930	2,090
27.....	608	3,110	2,690	1,900	584	9,000	5,950	1,560	1,580
28.....	552	2,590	2,000	3,560	545	21,700	4,960	1,790	1,440
29.....	492	1,560	1,290	2,490	608	21,800	3,210	1,570	1,700
30.....	471	1,150	860	1,510	.....	18,800	2,480	1,280	1,170
31.....	464	.....	1,190	1,820	.....	20,000	.....	1,170	.....
Mean....	1,360	1,040	1,180	3,120	693	3,530	6,320	3,100	3,300

NOTE.— Discharge relation affected by ice, January 15 to 21 and February 9 to March 27, both inclusive. Daily discharge given during these periods is approximate. New rating table was used, commencing March 29 and second new rating was used commencing June 18.

Monthly discharge of GENESEE RIVER AT ST. HELENA, for the nine months ending June 30, 1916

[Drainage area, 1,030 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF		Accuracy
	Maximum	Minimum	Mean	Per square mile	Depth in inches on drainage area		
October.....	5,020	219	1,360	1.32	1.52	A	B
November.....	3,110	350	1,040	1.01	1.13	A	B
December.....	5,280	328	1,180	1.15	1.33	B	B
January.....	12,800	429	3,120	3.03	3.49	B	B
February.....	3,440	295	693	0.673	0.73	C	C
March.....	21,800	436	3,530	3.43	3.95	C	C
April.....	20,600	2,000	6,320	6.14	6.85	C	C
May.....	29,000	560	3,100	3.01	3.47	D	D
June.....	10,600	815	3,300	3.20	3.57	C	C



**GENESEE RIVER AT JONES BRIDGE, NEAR MOUNT MORRIS**

**Location.**— At highway bridge known as Jones bridge, about 5 miles below the village of Mount Morris, Livingston county, 6 miles by river above the village of Geneseo,  $1\frac{3}{4}$  miles below the inflow of Canaseraga creek, and about  $1\frac{3}{4}$  miles above the mouth of Beards creek.

**Records available.**— May 22, 1903, to April 30, 1906; August 12, 1908, to May 1, 1914; July 12, 1915, to June 30, 1916.

**Drainage area.**— 1,410 square miles. (From U. S. Geological Survey water-supply papers.)

**Gage.**— Chain, fastened to upstream side of highway bridge; read daily, morning and evening, to hundredths until May 1, 1914.

During 1915 a Gurley 7-day water-stage recorder was installed on the right bank about 60 feet downstream from the bridge. The float well and house are standard timber construction. The well is connected with the river by two intake pipes; one below low water and the other at the elevation of gage height 5 feet. A sloping staff gage in two sections was also installed at the automatic gage. Sloping staff gage graduated from 0.25 foot to 28.0 feet. Datum for new installation 2.73 feet lower than that for former chain gage, making the elevation of the gage zero 540.00 (Conservation Commission datum).

**Control.**— Sandy clay; likely to shift, but, as shown by measurements, fairly permanent in recent years.

**Discharge measurements.**— Made at nearly all stages from foot-bridge erected on the outriggers of the bridge.

**Winter flow.**— Discharge relation for the winter months considerably affected by ice. Flow determined by frequent measurements during this period.

**Extremes of discharge.**— Current period: Maximum stage from water-stage recorder, 25.44 feet at noon, May 17; discharge, 55,100 second-feet. Minimum stage from water-stage recorder, 1.18 feet at 1 A. M., October 1; discharge, 263 second-feet.

1903–1916: Maximum stage recorded, 25.44 feet at noon, May 17, 1916; discharge, 55,100 second-feet. Minimum stage recorded, 2.7 feet (former datum) at 6 P. M., August 29, 1909; discharge, approximately 18 second-feet.

**Coöperation.**— Established and maintained by the United States Geological Survey in coöperation with the State Conservation Commission.

Discharge measurements of GENESEE RIVER AT JONES BRIDGE, NEAR MOUNT MORRIS, during the nine months ending June 30, 1916

DATE	Made by	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>
Jan. 13	C. C. Covert	4.66	2,080
Jan. 19 a	O. W. Hartwell	4.73	500
Feb. 17 b	C. C. Covert	5.02	577
Feb. 25 c	A. H. Davison	4.68	581
Mar. 18 c	C. C. Covert	4.20	710
April 3	C. C. Covert	12.90	13,200
April 5	C. C. Covert	12.78	7,040
April 12	E. D. Burchard	10.20	8,110
April 13	E. D. Burchard	10.12	5,740
April 14	E. D. Burchard	19.86	16,800
April 15	E. D. Burchard	21.85	15,900
April 17	E. D. Burchard	9.47	5,110
April 19	E. D. Burchard	6.54	3,440
April 22	E. D. Burchard	23.25	21,000
April 23	E. D. Burchard	22.39	16,100
April 24	E. D. Burchard	19.00	11,700
April 24	E. D. Burchard	18.64	11,200
April 25	E. D. Burchard	13.16	7,420
May 14	E. D. Burchard	2.62	84
May 17	E. D. Burchard	25.32	53,400

a Measurement made under complete ice cover at regular section.

b Measurement made under partial ice cover at regular section.

c Measurement made under complete ice cover 20 ft. above gage.

d Discharge relation affected by ice.

f Discharge relation probably affected by flooding of low lands below station.

Daily gage height, in feet, of GENESEE RIVER AT JONES BRIDGE, NEAR MOUNT MORRIS, for the nine months ending June 30, 1916. T. S. Trever, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1	1.89	2.05	3.05	5.8	6.2	5.0	23.7	8.0	3.6
2	2.05	1.94	2.8	11.4	5.2	4.9	23.4	5.2	3.35
3	4.4	1.86	2.75	19.8	3.6	4.7	20.8	4.7	4.6
4	2.95	1.88	2.6	11.3	2.85	4.6	16.9	5.7	9.2
5	6.6	1.88	2.5	9.6	2.55	4.5	12.0	5.2	6.2
6	9.8	1.88	2.4	20.5	3.0	4.3	9.6	.....	5.1
7	5.0	1.82	2.8	18.4	3.9	4.4	7.6	.....	4.5
8	8.8	1.80	2.25	6.5	5.2	5.1	6.9	.....	6.8
9	3.2	1.74	2.25	5.0	6.6	5.7	6.4	.....	6.4
10	2.95	1.70	1.94	4.6	5.8	.....	6.1	.....	6.0
11	2.75	1.89	1.95	4.9	5.6	.....	6.8	.....	6.3
12	2.4	1.66	2.8	4.6	5.4	.....	9.0	8.0	7.5
13	2.2	1.64	2.7	4.7	5.1	5.2	12.2	2.8	5.5
14	2.05	1.60	2.85	4.2	5.0	5.2	18.2	2.6	4.7
15	6.5	1.72	3.8	8.6	5.0	4.8	21.2	2.9	4.5
16	6.9	2.2	8.25	8.7	5.6	4.6	15.8	15.6	10.1
17	4.1	2.8	3.2	5.5	5.0	4.5	9.9	94.7	18.6
18	3.4	2.15	5.4	5.7	4.9	4.3	7.7	22.4	18.1
19	8.8	2.23	8.3	5.0	4.7	4.3	6.4	17.6	.....
20	6.8	5.6	5.4	4.8	.....	4.8	5.5	11.4	.....

Daily gage height, in feet, of **GENESSEE RIVER AT JONES BRIDGE, NEAR MOUNT MORRIS**,  
for the nine months ending June 30, 1916 — *Continued*

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
21.....	4.6	5.0	3.9	5.4	.....	4.3	10.0	7.4	.....
22.....	3.7	5.4	3.5	7.6	.....	4.2	20.3	5.6	.....
23.....	3.15	4.5	3.5	8.6	4.4	4.1	22.2	11.2	.....
24.....	2.8	3.9	3.3	5.2	4.4	4.0	19.2	8.5	.....
25.....	2.65	3.6	3.2	4.1	4.5	4.2	14.2	5.8	5.4
26.....	2.5	4.0	8.9	3.8	4.9	5.0	12.9	5.3	4.4
27.....	2.35	5.6	6.9	4.6	5.0	11.4	13.8	4.9	4.0
28.....	2.25	5.8	5.0	6.9	4.9	24.9	12.7	5.2	3.6
29.....	2.15	4.2	4.2	5.8	4.9	25.0	9.1	4.9	4.2
30.....	2.1	3.5	3.6	4.2	.....	24.0	7.0	4.3	3.35
31.....	2.05	.....	4.8	4.3	.....	23.9	.....	4.0	.....

NOTE.— Discharge relation affected by ice, December 8 to 17, January 16 to 21 and February 8 to March 31, all inclusive; also by backwater from Genesee, April 1 to 5, inclusive, and April 15, 16, 23, 24 and 25. The lower intake was clogged by mud between May 29 and July 13, and gage heights below 5 feet were determined from two observations per day, made by the gage reader.

Daily discharge, in second-feet, of **GENESSEE RIVER AT JONES BRIDGE, NEAR MOUNT MORRIS**, for the year ending June 30, 1916

DAY	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	.....	2,030	755	332	608	1,110	2,740	3,000	675	22,500	2,860	1,380
2.....	.....	2,400	657	1,110	558	975	7,010	2,380	675	18,000	2,410	1,240
3.....	.....	1,850	531	1,880	522	950	16,100	1,420	572	13,000	2,040	1,980
4.....	.....	2,270	478	1,060	531	875	6,920	1,000	518	9,800	2,670	5,160
5.....	.....	2,830	437	3,260	531	825	5,480	850	478	6,290	2,410	3,000
6.....	.....	1,500	437	5,240	531	775	17,300	1,080	540	5,480	.....	2,280
7.....	.....	1,000	437	2,240	504	725	8,900	1,030	652	3,960	.....	1,920
8.....	.....	825	406	1,520	495	675	3,190	875	1,030	3,470	.....	3,400
9.....	.....	2,480	452	1,200	470	608	2,240	775	1,800	3,120	.....	3,120
10.....	.....	1,420	413	1,060	453	558	2,000	675	1,300	2,930	.....	2,860
11.....	.....	900	353	950	445	504	2,180	585	1,220	3,060	.....	3,060
12.....	5,600	725	314	775	437	453	2,000	508	1,170	5,000	1,040	3,890
13.....	3,110	608	371	675	429	429	2,060	495	1,200	7,730	935	2,540
14.....	1,820	562	386	608	413	421	1,760	495	1,250	14,300	830	2,040
15.....	1,280	495	394	3,190	461	445	1,420	518	1,030	15,300	990	1,920
16.....	1,030	474	336	3,470	675	562	1,080	585	900	10,300	11,200	5,880
17.....	4,810	540	311	1,700	725	1,080	825	578	875	5,720	45,700	9,100
18.....	3,750	495	311	1,300	652	2,450	675	522	750	4,080	24,400	14,100
19.....	1,610	433	343	4,850	700	4,480	608	429	775	3,120	13,500	.....
20.....	1,360	394	482	3,300	2,600	2,480	540	425	750	2,540	7,010	.....
21.....	1,000	375	508	2,000	2,240	1,580	775	413	750	5,800	3,820	.....
22.....	850	3,070	409	1,470	2,480	1,360	3,960	413	725	17,000	2,600	.....
23.....	850	3,400	386	1,170	1,940	1,360	4,700	495	675	16,100	6,830	.....
24.....	750	1,940	353	975	1,580	1,250	2,360	425	630	12,100	4,620	.....
25.....	608	2,420	332	900	1,420	1,200	1,360	491	700	8,300	2,740	2,480
26.....	508	2,060	287	825	1,640	4,920	1,520	675	2,240	8,400	2,410	1,860
27.....	2,900	1,220	478	750	2,600	3,470	2,000	725	7,010	9,300	2,160	1,620
28.....	1,470	900	536	700	2,740	2,240	3,470	675	28,000	8,200	2,340	1,390
29.....	900	825	409	652	1,760	1,760	2,740	652	29,000	5,080	2,160	1,740
30.....	875	1,280	357	630	1,360	1,420	1,760	.....	24,600	3,540	1,800	1,240
31.....	2,450	960	.....	608	.....	2,120	1,820	.....	25,600	.....	1,620	.....
Mean.....	1,870	1,380	422	1,630	1,080	1,420	3,610	797	4,430	8,450	5,190	3,940

NOTE.— Discharge relation affected by ice, December 8 to 17, January 16 to 21 and February 8 to March 31, all inclusive; also by backwater from Genesee, April 1 to 5, inclusive, and April 15, 16, 23, 24 and 25. Daily discharge during these periods is approximate. Mean discharge, May 6 to 11, inclusive, estimated 1,630 second-feet and from June 19 to 24, inclusive, estimated 7,820 second-feet.

Monthly discharge of GENESEE RIVER AT JONES BRIDGE, NEAR MOUNT MORRIS,  
for the year ending June 30, 1916  
(Drainage area, 1,410 square miles)

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF	Accuracy
	Maximum	Minimum	Mean	Per square mile	Depth in inches on drainage area	
July 12-31.....	5,600	508	1,870	1.33	0.99	A
August.....	3,400	375	1,380	0.978	1.13	A
September.....	755	287	422	0.299	0.33	B
October.....	5,240	332	1,630	1.16	1.34	A
November.....	2,740	413	1,080	0.766	0.85	B
December.....	4,920	421	1,420	1.01	1.16	B
January.....	17,300	540	3,610	2.57	2.96	B
February.....	3,000	413	797	0.565	0.60	C
March.....	29,000	478	4,430	3.14	3.62	C
April.....	22,500	2,540	8,450	6.00	6.69	B
May.....	45,700	830	5,190	3.68	4.24	B
June.....	14,100	1,240	3,940	2.79	3.11	A

#### GENESEE RIVER AT ROCHESTER

**Location.**— At the Elmwood avenue bridge, at the north end of South Park,  $3\frac{1}{2}$  miles above the center of the city of Rochester, Monroe county,  $3\frac{1}{4}$  miles below the mouth of Black creek, and  $7\frac{1}{2}$  miles above the mouth of the river.

**Records available.**— February 9, 1904, to June 30, 1916. Fragmentary records before this period published in water-supply papers 24, 65 and 97.

**Drainage area.**— 2,360 square miles. (From United States Geological Survey water-supply papers.)

**Gage.**— Prior to 1910, a staff gage bolted to the downstream end of the first pier from the right-hand abutment was read once daily. From December, 1910, to September, 1915, gage heights recorded by a Gurley automatic water-stage recorder in the pump house immediately below the bridge on the right-hand bank. Elevation of zero of gage, 506.848, Barge canal datum, and 245.591, Rochester city datum. Gage datum unchanged since installation of the station.

**Control.**— Gravel, smooth; considered permanent.

**Discharge measurements.**— Made from bridge at which the staff gage is located. Prior to 1904, measurements and elevations of water-surface taken in conjunction with the water flowing over and around Johnson-Seymour dam in the city of Rochester.

**Winter flow.**— Affected by ice for short periods, although as a rule the channel is open.

**Extremes of discharge.**—Current period: Maximum stage from water-stage recorder, 15.3 feet at midnight, March 30; discharge, 48,300 second-feet. Minimum stage from water-stage recorder, 0.88 foot from 12:30 to 4 A. M., November 16; discharge, 238 second-feet.

1904-1916: Maximum stage from water-stage recorder, 15.30 feet at midnight, March 30, 1916; discharge, 48,300 second-feet. Minimum stage, from water-stage recorder, 0.71 foot from 10 P. M., September 30 to 4 A. M., October 1, 1913; discharge, 154 second-feet.

**Coöperation.**—Gage inspected by an employee of the Rochester Light & Railway Co. Station; established and maintained by the United States Geological Survey in coöperation with the State Conservation Commission.

**Daily elevation of water-surface (B. C. Datum) of GENESSEE RIVER AT ELKWOOD AVE., ROCHESTER, for the nine months ending June 30, 1916.** P. J. Slavin,  
Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	507.9	508.1	508.8	509.8	509.7	508.7	520.5	519.6	509.5
2.....	508.0	508.1	508.6	509.9	510.2	508.7	519.6	510.2	508.3
3.....	508.3	508.0	508.5	514.3	509.2	508.7	518.7	509.9	513.5
4.....	508.9	508.0	508.5	514.1	508.7	508.7	517.4	509.9	513.3
5.....	508.5	508.0	508.4	511.7	508.7	508.7	515.2	510.2	512.1
6.....	511.5	508.0	508.1	513.7	508.7	508.7	513.4	509.9	511.1
7.....	510.2	508.0	507.9	514.2	508.7	508.7	511.9	509.6	510.3
8.....	509.3	507.9	508.0	511.7	508.7	508.7	511.2	509.5	510.2
9.....	508.9	507.9	508.2	510.7	508.7	508.7	511.0	509.4	511.8
10.....	508.6	507.8	508.5	510.2	508.7	509.2	510.9	503.3	511.0
11.....	508.6	507.7	507.9	509.7	508.7	509.2	510.7	509.1	510.6
12.....	508.5	507.2	507.7	509.7	508.7	509.2	511.0	509.0	511.3
13.....	508.3	507.7	507.7	509.7	508.7	509.2	512.1	508.8	510.7
14.....	508.2	507.7	507.8	509.7	508.7	509.2	513.7	508.8	510.2
15.....	508.2	507.7	507.8	509.2	508.7	509.2	514.7	508.8	509.8
16.....	510.9	507.7	507.7	510.2	508.7	509.2	515.0	510.7	510.5
17.....	508.9	508.2	507.7	510.7	508.7	509.2	513.4	517.1	513.1
18.....	508.9	508.3	509.1	510.7	508.7	509.2	511.5	520.1	514.3
19.....	509.5	508.2	510.3	510.7	508.7	509.2	510.8	519.0	514.0
20.....	510.7	508.6	510.3	510.2	508.7	509.2	510.3	516.7	512.9
21.....	509.7	509.7	509.4	509.7	508.7	509.2	510.8	513.9	512.3
22.....	509.1	509.7	508.9	510.7	508.7	509.2	514.5	511.5	512.4
23.....	508.8	509.7	508.9	511.7	508.7	508.7	515.8	512.3	510.9
24.....	508.5	509.2	508.9	510.2	508.7	508.7	516.2	512.8	510.3
25.....	508.5	509.0	509.0	509.7	508.7	508.7	515.6	511.4	510.8
26.....	508.4	508.9	509.4	509.7	508.7	508.7	514.2	510.6	510.3
27.....	508.3	509.3	510.9	509.7	508.7	509.9	513.5	510.3	509.1
28.....	508.2	509.9	510.0	510.2	508.7	514.3	513.4	510.3	509.3
29.....	508.2	510.5	509.2	510.7	508.7	519.0	512.3	510.3	509.1
30.....	508.2	509.0	508.8	509.7	.....	522.0	511.2	509.9	508.9
31.....	508.2	.....	508.6	509.7	.....	521.5	.....	509.7	.....

NOTE.—In addition to Survey data, gage is read once daily—at 5:00 P. M.—by this Department.

Discharge measurements of GENESEE RIVER AT ROCHESTER, during the nine months ending June 30, 1916

DATE	Made by	Gage height	Discharge
		<i>Feet</i>	<i>Sec. ft.</i>
Oct. 14.....	C. S. DeGolyer.....	1.53	826
Oct. 14.....	C. S. DeGolyer.....	1.53	839
Jan. 18 a.....	O. W. Hartwell.....	c 3.86	1,130
Feb. 17.....	C. C. Covert.....	c 1.99	1,020
Feb. 24 b.....	A. H. Davison.....	c 1.91	837
Mar. 17.....	C. C. Covert.....	2.56	1,840
April 1.....	C. C. Covert.....	13.94	d 41,300
April 2.....	C. C. Covert.....	13.11	37,700
April 5.....	C. C. Covert.....	9.14	20,300
April 15.....	E. D. Burchard.....	7.91	16,000
April 15.....	E. D. Burchard.....	8.01	16,300
April 25.....	C. C. Covert.....	9.11	19,700
July 12.....	E. D. Burchard.....	1.75	1,050

a Measurement made under nearly complete ice cover under bridge.

b Measurement made under complete ice cover 200 ft. below gage.

c Discharge relation affected by ice.

d Discharge measured by 0.2 depth method, coefficient 0.89.

Daily gage height, in feet, of GENESEE RIVER AT ROCHESTER, for the nine months ending June 30, 1916. G. A. Bailey, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	1.25	1.37	2.15	2.08	3.05	2.26	13.9	3.9	2.75
2.....	1.29	1.43	1.96	3.0	3.5	2.26	13.1	3.5	2.6
3.....	2.40	1.36	1.86	7.2	2.85	2.29	12.1	3.2	5.8
4.....	2.32	1.31	1.79	7.7	2.27	2.24	10.9	3.15	6.6
5.....	1.96	1.29	1.73	5.6	2.10	2.17	9.2	3.4	5.6
6.....	3.9	1.28	1.43	6.6	2.12	2.12	7.1	3.15	4.45
7.....	3.9	1.28	1.34	7.7	2.08	2.11	5.4	2.85	3.65
8.....	2.75	1.25	1.30	6.0	2.39	2.13	4.5	2.7	8.5
9.....	2.26	1.20	1.40	4.15	2.26	2.34	4.25	2.6	4.9
10.....	2.00	1.13	1.97	3.5	2.16	2.7	4.15	2.5	4.3
11.....	1.90	1.05	1.35	3.0	2.17	2.8	3.9	2.38	3.9
12.....	1.81	1.00	1.15	3.3	2.25	2.7	4.15	2.24	4.3
13.....	1.65	.99	1.05	2.95	2.29	2.55	5.2	2.11	4.1
14.....	1.53	.95	1.07	3.0	2.22	2.55	6.6	2.02	3.45
15.....	1.49	.92	1.13	2.61	2.28	2.75	7.8	2.00	3.05
16.....	3.65	1.00	1.07	3.3	2.07	2.75	8.2	3.6	3.5
17.....	3.2	1.44	.94	3.75	1.99	2.6	7.2	9.7	5.9
18.....	2.36	1.60	1.28	3.85	1.97	2.55	5.1	12.6	7.3
19.....	2.55	1.52	2.9	3.85	2.02	2.44	4.2	12.5	7.3
20.....	4.1	1.84	3.8	3.45	1.98	2.41	3.65	10.4	6.3
21.....	3.35	3.0	3.0	3.2	1.87	2.40	3.85	7.7	5.7
22.....	3.55	3.0	2.86	4.0	1.90	2.89	6.5	5.1	4.6
23.....	2.20	3.0	2.20	4.7	1.85	2.89	8.8	5.3	4.25
24.....	1.95	2.65	2.24	4.05	1.91	2.33	9.4	6.2	3.65
25.....	1.81	2.38	2.28	3.1	2.00	2.28	9.0	4.9	3.85
26.....	1.75	2.23	2.74	2.75	2.10	2.30	7.7	3.85	3.75
27.....	1.64	2.50	4.15	2.75	2.23	3.1	6.7	3.55	8.1
28.....	1.56	3.15	3.5	3.85	2.38	6.8	6.6	3.45	2.65
29.....	1.51	2.95	2.75	3.8	2.31	10.8	5.8	3.5	2.82
30.....	1.48	2.44	2.34	3.15	.....	14.6	4.6	3.15	2.20
31.....	1.45	.....	2.25	2.75	.....	14.9	.....	2.9	.....

NOTE.— Discharge relation affected by ice, December 9 to 16, January 15 to 21 and February 8 to March 27, all inclusive.

## REPORT OF STATE ENGINEER

Daily discharge, in second-feet, of GENESEE RIVER AT ROCHESTER, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	554	692	1,840	1,650	3,480	1,380	41,300	4,700	2,500
2.....	598	768	1,530	3,380	4,390	1,380	37,500	3,880	2,260
3.....	2,280	680	1,380	14,600	3,100	1,430	32,900	3,300	9,430
4.....	2,140	622	1,270	16,200	2,050	1,350	27,600	3,210	11,800
5.....	1,530	508	1,180	9,820	1,760	1,240	20,700	3,680	8,870
6.....	5,310	587	768	12,800	1,790	1,170	13,300	3,210	5,930
7.....	5,310	587	656	16,200	1,730	1,150	8,330	2,680	4,180
8.....	2,910	554	610	11,000	1,550	1,180	6,050	2,420	3,880
9.....	2,030	500	500	6,920	1,380	1,500	5,460	2,260	7,030
10.....	1,600	432	414	4,390	1,230	2,100	5,240	2,100	5,580
11.....	1,440	362	336	3,380	1,240	2,240	4,700	1,920	4,700
12.....	1,300	320	306	3,970	1,360	2,070	5,240	1,710	5,580
13.....	1,070	313	278	3,280	1,430	1,880	7,800	1,520	5,130
14.....	900	285	299	3,380	1,320	1,840	11,800	1,400	3,780
15.....	846	284	285	2,460	1,410	2,150	15,600	1,370	3,030
16.....	4,720	320	278	1,760	1,100	2,150	17,000	4,080	3,880
17.....	3,770	780	278	1,360	1,030	1,930	13,600	22,600	9,710
18.....	2,210	1,000	587	1,130	956	1,810	7,540	35,200	14,000
19.....	2,550	887	3,190	1,100	1,030	1,660	5,350	34,700	14,000
20.....	5,790	1,350	5,070	1,140	970	1,620	4,180	25,500	10,900
21.....	4,080	3,380	3,380	1,760	820	1,600	4,600	15,300	9,150
22.....	2,550	3,380	2,210	3,770	860	1,580	11,500	7,540	6,290
23.....	1,930	3,380	1,930	7,320	794	1,580	19,200	8,060	5,460
24.....	1,520	2,730	2,000	5,670	833	1,490	21,400	10,600	4,180
25.....	1,300	2,240	2,070	3,570	1,000	1,410	19,900	7,030	4,600
26.....	1,180	1,980	2,890	2,910	1,140	1,440	15,300	4,600	4,390
27.....	1,060	2,460	5,920	2,910	1,340	2,800	12,100	3,980	3,120
28.....	942	3,670	4,390	4,080	1,490	12,400	11,800	3,780	2,340
29.....	874	3,280	2,910	5,070	1,460	27,200	9,430	3,880	1,830
30.....	833	2,350	2,170	3,670	.....	44,800	6,290	3,210	1,660
31.....	794	.....	2,020	2,910	.....	46,300	.....	2,760	.....
Mean....	2,130	1,360	1,710	5,240	1,520	5,670	13,100	7,490	5,970

NOTE.—Discharge relation affected by ice, December 9 to 16, January 15 to 21 and February 8 to March 27, all inclusive. Daily discharge given for these periods is approximate. New rating used, beginning March 28.

Monthly discharge of GENESEE RIVER AT ROCHESTER, for the nine months ending June 30, 1916

[Drainage area, 2,360 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF Depth in inches on drainage area	Accu- racy
	Maximum	Minimum	Mean	Per square mile		
October.....	5,790	554	2,130	0.903	1.04	A
November.....	3,670	264	1,360	0.576	0.64	B
December.....	5,920	278	1,710	0.725	0.84	B
January.....	16,200	1,100	5,240	2.22	2.56	B
February.....	4,390	794	1,520	0.644	0.69	B
March.....	46,300	1,150	5,670	2.40	2.77	C
April.....	41,300	4,180	13,100	5.55	6.19	B
May.....	35,200	1,370	7,490	3.17	3.66	B
June.....	14,000	1,650	5,970	2.53	2.82	A

## CANASERAGA CREEK

### DESCRIPTION

Canaseraga creek, one of the most important tributaries to the Genesee river from the east, rises in the extreme northwestern corner of Steuben county and flows in a northwestern direction to its junction with the Genesee river, a short distance below the village of Mount Morris.

Through its entire course, the creek flows through a flat, fertile valley, devoted almost entirely to the pursuit of agriculture. From the village of Dansville to Mount Morris, the natural bed of the river wound back and forth across the valley. The velocity was so slow that the large amount of silt which was brought down from the foot hills by the smaller streams was deposited in the creek bed, raising it to an elevation higher, in many cases, than the surrounding country. The deposit of silt, coupled with the extreme deviation of the creek from a straight line caused the 11,000 acres, which border on the stream below Dansville, to become annually inundated by the flood waters.

During 1911 to 1915, inclusive, the channel was deepened, straightened, confined in part by levees, and the length of flow materially reduced from Cumminsville bridge, a mile north or downstream from the Dansville gaging station, to Shakers Crossing, about a mile above the junction with the Genesee river.

### CANASERAGA CREEK NEAR DANSVILLE

**Location.**— At the highway bridge, 1 mile west of the village of Dansville, Livingston county, about 2,200 feet below the mouth of Mill brook and about 22 miles above the mouth of the creek.

**Records available.**— July 21, 1910, to December 31, 1912, and July 10, 1915, to June 30, 1916.

**Drainage area.**— 167 square miles. (Computed by engineers of State Conservation Commission.)

**Gage.**—Vertical staff, bolted to downstream side of the left abutment; read twice daily; datum lowered 4.77 feet when station was reestablished, July 10, 1915, making the elevation of the gage zero 640.00 (Conservation Commission datum).



**Control.**— Sand and gravel; shifting during high water.

**Discharge measurements.**— Made from the bridge at high stages and by wading at low stages.

**Winter flow.**— Discharge relation affected by ice.

**Extremes of discharge.**— Current period: Maximum stage recorded, 13.0 feet at 9:30 p. m., May 16; discharge not computed. Minimum stage recorded, 5.79 feet at 7:30 a. m., October 1; discharge, 37 second-feet.

**Accuracy.**— Estimates published are only fair because of shifting channel conditions.

**Coöperation.**— Established and maintained by the United States Geological Survey in coöperation with the State Conservation Commission.

Discharge measurements of CANASERAGA CREEK NEAR DANSVILLE, during the nine months ending June 30, 1916

DATE	Made by	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>
Mar. 30.....	H. Johnson.....	8.26	1,590
Mar. 30.....	F. H. Macy.....	9.11	2,370
Mar. 30.....	C. C. Covert.....	9.69	3,230
Mar. 31.....	C. C. Covert.....	8.34	1,700
Apr. 4.....	C. C. Covert.....	7.19	727
Apr. 14.....	F. H. Macy.....	9.35	2,670
Apr. 17.....	F. H. Macy.....	6.80	379
Apr. 19.....	E. D. Burchard.....	6.55	258
Apr. 19.....	E. D. Burchard.....	6.55	259
Apr. 21.....	E. D. Burchard.....	7.15	581
Apr. 21.....	E. D. Burchard.....	7.13	594
May 26.....	E. D. Burchard.....	6.70	256
May 26.....	E. D. Burchard.....	6.70	259

Daily gage height, in feet, of CANASERAGA CREEK NEAR DANSVILLE, for the nine months ending June 30, 1916. Floyd Harter, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	5.99	5.90	6.25	6.5	6.32		8.6	6.6	6.38
2.....	6.7	5.92	6.18	8.4	6.38		8.3	6.6	6.30
3.....	6.35	5.92	6.10	7.3	6.42		7.3	6.7	7.15
4.....	6.16	5.90	6.00	6.9	6.42		7.2	6.8	6.6
5.....	7.90	5.95	5.96	7.6	6.40		6.9	6.7	6.65
6.....	7.05	5.92	5.92	7.7	6.45		6.8	6.5	6.42
7.....	6.5	5.90	5.90	7.25	6.38		6.7	6.48	6.7
8.....	6.28	5.90	5.92	6.8	6.40		6.6	6.42	7.0
9.....	6.25	5.90	5.92	6.45	6.35		6.65	6.38	7.35
10.....	6.22	5.88	5.90	6.20	6.30		6.02	6.32	7.05
11.....	6.10	5.85	5.92	6.00	6.28		6.28	6.38	6.9
12.....	5.98	5.85	6.00	6.42	6.38		7.3	6.32	6.6
13.....	5.95	5.85	6.02	6.40	6.32		7.6	6.25	6.35
14.....	5.92	5.85	6.02	6.32	6.30		8.6	6.22	6.38
15.....	7.5	6.05	6.08	6.28	6.38		7.55	6.55	6.5
16.....	6.75	6.00	6.10	6.32	6.42		6.9	9.7	7.6
17.....	6.25	5.95	6.08	6.42	6.48		6.7	9.6	9.5
18.....	6.08	5.95	6.9	6.35	6.38		6.75	7.95	7.7
19.....	6.7	6.35	6.7	6.45			6.55	7.6	7.6
20.....	6.40	6.85	6.48	6.42			6.48	7.15	7.3
21.....	6.25	6.7	6.28	6.70			7.3	6.8	7.3
22.....	6.18	6.48	6.22	7.0			9.0	6.85	6.9
23.....	6.12	6.40	6.18	6.5			8.2	7.3	6.65
24.....	6.10	6.30	6.12	6.48			7.5	7.15	6.6
25.....	6.05	6.32	6.22	6.32			7.1	6.95	6.45
26.....	6.08	6.35	6.65	6.38		7.25	7.4	6.7	6.38
27.....	6.02	6.48	6.6	6.6		9.4	7.8	6.85	6.30
28.....	6.00	6.5	6.5	6.8		10.6	7.3	6.9	6.28
29.....	5.95	6.42	6.32	6.5		9.4	6.95	6.7	6.20
30.....	5.95	6.32	6.30	6.32		9.0	6.7	6.65	6.10
31.....	5.90		6.28	6.42		8.8		6.42	

NOTE.—Discharge relation affected by ice, December 11 to 17, 30 to 31, January 14 to 20 and February 1 to March 24.

Daily discharge, in second-feet, of CANASERAGA CREEK NEAR DANSVILLE, for the year ending June 30, 1916

DAY	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....		53	65	65	50	129	220			1,920	280	132
2.....		62	49	315	53	109	1,580			1,650	290	109
3.....		162	44	162	53	88	670			800	330	495
4.....		216	37	104	50	67	420			730	380	212
5.....		120	37	1,140	58	64	900			525	330	235
6.....		78	35	505	53	53	980			465	235	145
7.....		65	35	220	50	50	635			410	226	258
8.....		242	35	138	50	53	365			355	201	410
9.....		350	93	120	50	53	200			382	185	620
10.....	101	141	49	120	48	50	114			114	162	438
11.....		71	44	88	44	48	67			202	185	355
12.....		101	46	64	44	45	188			800	162	212
13.....	114	71	35	58	44	43	180			1,040	139	124
14.....	71	58	30	53	44	42	114			1,920	129	132
15.....	65	58	30	820	78	42	88			880	258	173

Daily discharge, in second-feet, of CANASERAGA CREEK NEAR DANVILLE, for the year ending June 30, 1916 — *Continued*

DAY	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
16.....	53	49	33	340	67	44	67	.....	.....	435	2,850	805
17.....	505	58	44	129	58	58	53	.....	.....	330	2,600	2,780
18.....	86	49	37	84	58	420	48	.....	.....	355	1,080	1,120
19.....	71	46	65	315	162	315	50	.....	.....	258	805	1,040
20.....	58	37	46	180	392	212	88	.....	.....	226	495	800
21.....	44	37	37	129	315	138	315	.....	.....	690	305	800
22.....	62	470	35	109	212	120	475	.....	.....	2,150	330	525
23.....	58	216	30	93	180	109	220	.....	.....	1,430	585	382
24.....	37	111	27	88	144	93	212	.....	.....	940	495	355
25.....	30	252	27	78	151	120	151	.....	.....	555	382	281
26.....	30	135	40	84	162	290	173	.....	635	760	258	248
27.....	62	101	44	71	212	265	265	.....	2,500	1,080	330	214
28.....	49	71	35	67	220	220	365	.....	3,880	690	355	206
29.....	37	176	27	58	188	151	220	.....	2,680	465	258	175
30.....	135	129	25	58	151	114	151	.....	2,290	330	235	142
31.....	78	101	.....	50	.....	114	188	.....	2,100	.....	145	.....
Mean...	86.6	125	40.5	191	115	120	315	.....	.....	760	484	464

NOTE.— Discharge relation affected by ice, December 11 to 17, 30 to 31, January 14 to 20 and February 1 to March 24, all inclusive. Daily discharge given in these periods is approximate. Daily discharge in both tables was computed from 5 rating tables, used for the following periods: July 10, 1915, to March 27, 1916; March 28 to April 14; April 15 to May 16; May 17 to June 16; and June 17 to June 30.

Monthly discharge of CANASERAGA CREEK NEAR DANVILLE, for the year ending June 30, 1916

[Drainage area, 167 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF Depth in inches on drainage area	Accuracy
	Maximum	Minimum	Mean	Per square mile		
July 13-31.....	505	30	86.6	0.519	0.37	B
August.....	470	37	125	0.749	0.86	B
September.....	93	25	40.5	0.243	0.27	B
October.....	1,140	50	191	1.14	1.31	B
November.....	392	44	115	0.689	0.77	B
December.....	420	42	120	0.719	0.83	C
January.....	1,580	48	315	1.89	2.18	C
February.....	.....	.....	.....	.....	.....	.....
March.....	.....	.....	.....	.....	.....	.....
April.....	2,150	114	760	4.55	5.08	C
May.....	2,850	129	484	2.90	3.34	C
June.....	2,780	109	464	2.78	3.10	C

## CANASERAGA CREEK AT GROVELAND STATION

**Location.**— About 400 feet above the highway bridge at Groveland Station, Livingston county. The creek is flowing through the improved channel at this point.

**Records available.**— August 5, 1915, to June 30, 1916.

**Drainage area.**— 195 square miles. (Computed by engineers of State Conservation Commission.)

**Gage.**— Sloping staff gage on right bank, graduated from 6.0 to 19.0 feet. The zero of the gage is at elevation 560.00 (Conservation Commission datum).

**Control.**— Gravel and clay; likely to shift.

**Discharge measurements.**— Made from highway bridge during medium and high stages and by wading opposite gage at low stages.

**Winter flow.**— Discharge relation probably affected by ice.

**Extremes of stage.**— Current period: Maximum stage recorded, 16.0 feet at 7:30 P. M., May 16. Minimum stage recorded, 6.65 feet at 6:00 A. M. and 6:00 P. M., October 1.

**Coöperation.**— Established and maintained by the United States Geological Survey in coöperation with the State Conservation Commission.

Discharge measurements of CANASERAGA CREEK AT GROVELAND STATION, during the nine months ending June 30, 1916

DATE	Made by	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>
Mar. 29.....	F. H. Macy.....	13.65	2,110
Mar. 30.....	C. C. Covert.....	13.16	1,570
April 4.....	C. C. Covert.....	10.64	6.92
April 18.....	E. D. Burchard.....	8.80	366
April 21.....	E. D. Burchard.....	10.18	636
April 22.....	E. D. Burchard.....	14.64	2,560
April 26.....	E. D. Burchard.....	11.10	847
April 26.....	E. D. Burchard.....	10.80	766
May 15.....	E. D. Burchard.....	7.65	169
May 18.....	E. D. Burchard.....	12.47	1,050
May 18.....	E. D. Burchard.....	12.42	1,000
May 23.....	E. D. Burchard.....	11.13	788
May 23.....	E. D. Burchard.....	11.02	745
May 26.....	E. D. Burchard.....	8.61	320
June 17.....	E. D. Burchard.....	13.33	1,610

Daily gage height, in feet, of CANASERAGA CREEK AT GROVELAND STATION, for the nine months ending June 30, 1916. E. R. Stoner, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	6.65	6.9	7.5	.....	.....	.....	13.6	9.0	8.0
2.....	7.9	6.9	7.45	.....	.....	.....	12.9	8.8	7.8
3.....	7.45	6.9	7.35	.....	.....	.....	11.9	8.7	9.0
4.....	7.15	6.85	7.2	.....	.....	.....	10.8	9.4	8.8
5.....	11.3	7.0	7.0	.....	.....	.....	9.3	6.7	8.2
6.....	8.2	6.9	7.1	.....	.....	.....	8.4	8.5	8.1
7.....	7.9	6.85	7.0	.....	.....	.....	8.9	8.4	7.9
8.....	7.6	6.9	7.0	.....	.....	.....	8.8	8.5	8.6
9.....	7.3	6.9	7.1	.....	.....	.....	8.0	8.3	8.4
10.....	7.2	6.85	.....	.....	.....	.....	8.8	8.0	8.3
11.....	7.1	6.8	.....	.....	.....	.....	8.7	8.0	8.3
12.....	7.0	6.75	.....	.....	.....	.....	16.0	7.7	8.4
13.....	6.9	6.7	.....	.....	.....	.....	10.2	7.6	8.0
14.....	6.9	6.75	.....	.....	.....	.....	12.7	7.6	7.8
15.....	8.5	7.2	.....	.....	.....	.....	12.3	8.4	8.0
16.....	8.1	7.1	.....	.....	.....	.....	9.8	15.2	9.4
17.....	7.7	7.05	.....	.....	.....	.....	9.2	15.4	14.5
18.....	7.7	6.9	.....	.....	.....	.....	8.9	12.4	11.3
19.....	8.1	7.2	.....	.....	.....	.....	8.4	10.9	10.5
20.....	7.7	8.0	.....	.....	.....	.....	8.4	10.1	10.3
21.....	7.6	8.0	.....	.....	.....	.....	11.2	9.5	9.8
22.....	7.4	7.8	.....	.....	.....	.....	14.6	9.2	9.5
23.....	7.35	7.7	.....	.....	.....	.....	13.5	11.6	8.8
24.....	7.1	7.6	.....	.....	.....	.....	11.7	9.8	8.6
25.....	7.1	7.5	.....	.....	.....	.....	10.6	9.0	8.5
26.....	7.1	7.4	.....	.....	.....	.....	11.6	8.6	8.2
27.....	7.05	7.35	.....	.....	.....	.....	13.0	8.8	8.1
28.....	7.0	7.6	.....	.....	.....	.....	11.4	8.7	8.6
29.....	6.95	7.6	.....	.....	.....	.....	10.1	8.5	7.9
30.....	6.9	7.6	.....	.....	.....	.....	9.5	8.2	7.8
31.....	6.9	.....	.....	.....	.....	14.0	.....	8.1	.....

No discharge estimates are published, since the meter measurements seem to indicate that the discharge relation is affected by backwater during flood stages.

#### CANASERAGA CREEK AT SHAKERS CROSSING, NEAR MOUNT MORRIS

**Location.**— At highway bridge at Shakers Crossing, about 1 mile above mouth and about  $1\frac{1}{2}$  miles northeast of Mount Morris, Livingston county.

**Records available.**— Occasional discharge measurements, 1904–1915; continuous gage height record, July 13, 1915, to June 30, 1916.

**Drainage area.**— 347 square miles. (Computed by engineers of State Conservation Commission.)

**Gage.**—Gurley 7-day water-stage recorder on the left bank just below the bridge. Gage house and well are standard timber construction. The float well is connected with the stream by two pipes, one below low water and the other at the elevation of gage height 11.2. The zero of the gage is at elevation 540.00 (Conservation Commission datum).

**Control.**—Firm gravel not likely to shift; subject to backwater from Genesee river.

**Discharge measurements.**—Made from the highway bridge during medium and high stages and by wading during low stages.

**Winter flow.**—Discharge relation probably affected by ice.

**Extremes of stage.**—Current period: Maximum stage from automatic gage record, 28.92 feet at 1 p. m., May 17. Minimum stage from automatic gage record, 8.48 feet at 5 p. m., November 7.

**Coöperation.**—Established and maintained by the United States Geological Survey in coöperation with the State Conservation Commission.

Discharge measurements of CANASERAGA CREEK AT SHAKERS CROSSING, NEAR MOUNT MORRIS, during the nine months ending June 30, 1916

DATE	Made by	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 12.....	C. S. De Golyer.....	9.48	349
Oct. 12.....	C. S. De Golyer.....	9.37	327
Jan. 13.....	C. C. Covert.....	10.50	595
Jan. 20.....	O. W. Hartwell.....	b 10.62	322
Feb. 17.....	C. C. Covert.....	b 9.45	249
Feb. 25.....	A. H. Davison.....	9.55	345
Mar. 29.....	C. C. Covert.....	28.25	6,793
Mar. 31.....	C. C. Covert.....	26.95	4,970
April 3.....	C. C. Covert.....	22.68	5,160
April 4.....	C. C. Covert.....	19.56	3,510
April 16.....	E. D. Burchard.....	19.03	3,040
April 16.....	E. D. Burchard.....	18.80	3,000
April 16.....	E. D. Burchard.....	17.70	2,640
April 16.....	E. D. Burchard.....	17.52	2,610
April 17.....	E. D. Burchard.....	14.70	1,650
April 17.....	E. D. Burchard.....	14.52	1,540
April 17.....	E. D. Burchard.....	13.65	1,310
April 17.....	E. D. Burchard.....	13.50	1,270
April 18.....	E. D. Burchard.....	12.50	896
April 19.....	E. D. Burchard.....	11.19	658
April 20.....	E. D. Burchard.....	10.81	598
April 24.....	E. D. Burchard.....	22.38	4,070
April 24.....	E. D. Burchard.....	22.14	4,090
April 26.....	E. D. Burchard.....	17.08	2,770
April 27.....	E. D. Burchard.....	18.00	2,550
May 17.....	E. D. Burchard.....	28.62	7,020

b Discharge relation probably affected by ice.

Daily gage height, in feet, of CANASERAGA CREEK AT SHAKERS CROSSING, NEAR MOUNT MORRIS, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	9.28	9.06	9.58	9.86	11.28	9.90	26.41	11.23	.....
2.....	10.06	9.04	9.48	15.54	10.37	9.82	25.93	10.85	.....
3.....	9.96	9.08	9.40	21.65	9.60	9.73	23.40	10.62	.....
4.....	9.58	9.08	9.39	15.05	.....	9.68	20.10	11.20	12.80
5.....	11.62	9.08	9.10	15.25	9.47	9.43	16.00	10.82	.....
6.....	13.56	9.14	9.24	22.96	9.31	9.59	13.97	10.38	.....
7.....	.....	8.82	9.32	16.57	9.42	9.72	12.38	9.75	.....
8.....	.....	9.00	9.28	11.68	9.34	10.38	11.80	9.93	.....
9.....	.....	9.04	9.28	10.56	9.40	10.70	11.52	9.87	.....
10.....	9.26	8.96	9.19	10.46	9.51	10.56	11.38	9.75	.....
11.....	9.39	8.98	9.28	10.49	9.52	10.32	11.45	9.63	.....
12.....	9.38	9.08	.....	10.23	9.67	9.98	13.29	9.43	.....
13.....	9.30	.....	.....	10.48	.....	10.08	15.76	9.35	.....
14.....	9.26	8.84	.....	9.97	.....	10.42	20.83	.....	.....
15.....	11.59	9.10	.....	9.99	.....	10.10	23.30	.....	.....
16.....	11.50	9.28	.....	9.93	.....	10.12	18.70	.....	14.03
17.....	9.71	9.24	.....	10.13	.....	10.13	14.30	28.05	17.25
18.....	9.77	9.16	.....	10.38	.....	.....	12.40	25.50	20.50
19.....	12.88	9.30	.....	10.42	.....	.....	11.38	21.20	15.39
20.....	11.36	10.94	10.37	10.47	9.18	9.99	10.85	16.55	15.56
21.....	10.13	10.46	9.83	10.28	9.41	9.93	14.09	13.20	12.59
22.....	9.70	10.80	9.63	11.54	9.36	9.91	23.28	11.32	12.25
23.....	9.58	10.18	9.58	12.44	9.34	9.88	24.40	15.49	11.00
24.....	9.20	9.94	9.60	10.51	9.38	9.81	21.55	12.85	10.76
25.....	9.30	9.69	9.58	10.04	9.51	9.93	18.04	11.15	.....
26.....	9.26	9.88	12.48	9.96	9.77	10.89	16.99	10.65	.....
27.....	9.20	10.82	11.08	10.58	9.81	16.93	17.52	.....	.....
28.....	9.16	10.82	10.27	11.90	9.80	27.42	16.42	.....	.....
29.....	9.16	10.00	9.41	11.02	9.86	28.05	13.92	.....	.....
30.....	9.16	9.81	9.26	9.90	.....	27.02	11.90	.....	.....
31.....	8.94	.....	9.91	10.28	.....	26.82	.....	.....	.....

NOTE.— The lower intake pipe to the float well was clogged with mud during the floods of April-May so that the water-stage recorder did not indicate the true gage height when the stage was lower than the upper intake (gage height 11.2). For this reason no gage heights are available for the following periods: May 14 to 16, May 27 to June 3, June 5 to 15, June 25 to 30. The pipe was cleaned out July 15.

No discharge estimates are published, since the discharge relation is affected by backwater from the Genesee river.

## KESHEQUA CREEK

### DESCRIPTION

Keshequa creek, the principal tributary to Canaseraga creek, has its source among the hills of northern Allegany county and flows north and northeast through Nunda and Tuscarora joining Canaseraga creek near Sonyea, the home of the Craig Colony for Epileptics. Throughout its length of some 20 miles it flows through a narrow valley and falls about 1,200 feet. No power is developed, as the flow during the summer averages only 3 to 6

second-feet. The yearly rainfall is a little above the average for the Genesee valley and ranges from 28 to 36 inches.

#### KESHEQUA CREEK NEAR SONYEA

**Location.**—About 400 feet above the D., L. & W. railroad bridge and one-half mile below the former gaging station at Sonyea, Livingston county.

**Records available.**—July 22, 1910, to December 31, 1912, from former station at Sonyea; August 29, 1915, to June 30, 1916, from present station.

**Drainage area.**—74 square miles. (Measured on United States Geological Survey topographic maps.)

**Gage.**—Staff in two sections, sloping section graduated from 3.0 to 6.0 feet; vertical section, graduated from 6.0 to 17.0 feet. The zero of the gage is at elevation 560.00 (Conservation Commission datum).

**Control.**—Gravel, probably fairly permanent. Discharge relation affected by backwater during extremely high stages.

**Discharge measurements.**—Made from foot-bridge at gage during high stages and by wading during low stages.

**Winter flow.**—Discharge relation probably affected by ice.

**Extremes of discharges.**—Current period: Maximum stage recorded, 13.15 feet at 7 A. M., March 28; discharge not determined. Minimum stage recorded, 4.0 feet several times during period; discharge, 1.5 second-feet.

**Accuracy.** Discharge estimates fairly good.

**Coöperation.**—Established and maintained by the United States Geological Survey in coöperation with the State Conservation Commission.



Discharge measurements of KESHEQUA CREEK NEAR SONYEA, during the nine months  
ending June 30, 1916

DATE	Made by	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>
Mar. 29.....	C. C. Covert.....	9.84	1,020
Mar. 31.....	C. C. Covert.....	8.82	672
April 4.....	C. C. Covert.....	5.79	190
April 18.....	E. D. Burchard.....	6.03	84.6
April 21.....	E. D. Burchard.....	6.28	278
April 21.....	E. D. Burchard.....	6.20	274
April 22.....	E. D. Burchard.....	9.95	1,120
April 23.....	E. D. Burchard.....	7.38	476
May 14 a.....	E. D. Burchard.....	4.40	23.8
May 14 a.....	E. D. Burchard.....	4.39	20.4
May 18.....	E. D. Burchard.....	7.65	247
May 23.....	E. D. Burchard.....	6.21	296
May 23.....	E. D. Burchard.....	6.10	279
May 26.....	E. D. Burchard.....	4.86	66.0
June 17.....	E. D. Burchard.....	6.20	305

a Measurement made by wading 250 feet above gage.

NOTE.—Discharge measurement of July 10, 1915, was 36.8 not 363 second-feet, Report State Engineer 1915, Vol. II, p. 49.

Daily gage height, in feet, of KESHEQUA CREEK NEAR SONYEA, for the nine months  
ending June 30, 1916. Fred Mott, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	4.05	4.20	4.95	.....	.....	.....	9.0	4.98	4.72
2.....	4.50	4.20	4.70	.....	.....	.....	9.1	4.92	4.63
3.....	4.45	4.20	5.3	.....	.....	.....	7.1	4.85	4.62
4.....	4.30	4.20	5.55	.....	.....	.....	5.9	4.75	4.60
5.....	5.15	4.20	5.5	.....	.....	.....	5.25	4.72	4.65
6.....	5.0	4.20	4.05	.....	.....	.....	5.3	4.80	4.68
7.....	4.50	4.20	4.05	.....	.....	.....	5.05	4.75	4.62
8.....	4.40	4.05	4.05	.....	.....	.....	5.10	4.72	4.62
9.....	4.35	4.15	4.10	.....	.....	.....	5.05	4.72	4.68
10.....	4.30	4.05	4.05	.....	.....	.....	5.1	4.68	4.50
11.....	4.40	4.15	4.05	.....	.....	.....	5.2	4.62	4.52
12.....	4.15	4.15	4.05	.....	.....	.....	6.1	4.62	4.78
13.....	4.10	4.15	4.15	.....	.....	.....	6.6	4.75	4.72
14.....	4.10	4.15	4.05	.....	.....	.....	10.1	4.55	4.68
15.....	6.8	4.15	4.15	.....	.....	.....	6.4	4.55	4.62
16.....	5.3	4.15	4.15	.....	.....	.....	5.8	11.8	4.80
17.....	4.25	4.15	4.05	.....	.....	.....	5.3	10.0	6.3
18.....	4.10	4.05	6.8	.....	.....	.....	5.3	8.5	5.7
19.....	6.2	4.10	5.6	.....	.....	.....	5.1	7.5	5.6
20.....	5.05	5.4	5.15	.....	.....	.....	4.82	6.9	5.5
21.....	5.3	5.6	5.2	.....	.....	.....	6.5	6.5	5.45
22.....	5.2	4.85	5.25	.....	.....	.....	10.7	6.6	5.15
23.....	4.4	4.75	5.25	.....	.....	.....	7.8	6.6	5.1
24.....	4.10	4.6	5.45	.....	.....	.....	6.4	5.7	5.05
25.....	4.05	4.45	4.45	.....	.....	.....	6.2	4.98	4.78
26.....	4.00	5.0	5.15	.....	.....	.....	6.0	4.88	4.7
27.....	4.20	5.1	5.85	.....	.....	13.1	6.0	4.88	4.5
28.....	4.10	5.3	6.0	.....	.....	11.2	6.9	4.92	4.42
29.....	4.20	5.25	5.7	.....	.....	9.1	5.9	4.85	4.42
30.....	4.20	4.7	5.35	.....	.....	9.1	5.2	4.82	4.38
31.....	4.20	.....	5.25	.....	.....	9.2	.....	4.70	.....

NOTE.—Gage observations suspended, January 1 to March 26, on account of ice.

Daily discharge, in second-feet, of KESHEQUA CREEK NEAR SONYEA, for the year ending June 30, 1916

DAY	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1		6.6	3.0	8.7	78				759	81	51
2		4.5	30	8.7	49				759	74	44
3		4.5	28	8.7	30				269	66	41
4		3.0	15	8.7	15				207	54	39
5		1.5	107	8.7	6.6				123	51	44
6		3.0	84	8.7	3.0				131	59	37
7		4.5	30	8.7	3.0				92	54	32
8		1.5	22	3.0	3.0				99	51	32
9		3.0	18	6.6	4.5				92	51	37
10		8.7	15	3.0	3.0				99	47	30
11		3.0	22	6.6	1.5				115	41	32
12		6.6	6.6	6.6	1.5				271	41	57
13		4.5	4.5	6.6	1.5				369	54	51
14		6.6	4.5	6.6	1.5				1,160	34	47
15		6.6	411	6.6	1.5				329	37	41
16		1.5	181	6.6	1.5				216	1,090	59
17		1.5	12	6.6	3.0				131	349	309
18		1.5	4.5	3.0	411				131	290	198
19		3.0	290	4.5	181				99	560	181
20		8.7	92	147	92				61	432	164
21		4.5	131	181	49				349	349	156
22		4.5	115	65	22				1,310	369	107
23		4.5	22	54	12				626	369	99
24		3.0	4.5	39	8.7				329	198	92
25		1.5	3.0	26	12				290	81	57
26		4.5	1.5	84	107				252	69	49
27		4.5	8.7	99	225			1,660	252	69	30
28		6.6	4.5	131	252			1,380	432	74	24
29	6.6	1.5	8.7	123	198			828	234	65	24
30	8.7	3.0	8.7	49	139			8.5	115	61	21
31	6.6		8.7		123			82		49	
Mean	7.30	4.08	53.0	37.5	65.5				327	170	72.8

Monthly discharge of KESHEQUA CREEK NEAR SONYEA, for the year ending June 30, 1916

(Drainage area, 74 square miles)

MONTH	DISCHARGE IN SECOND-FEET				Run-off Depth in inches on drainage area	Accu- racy
	Maximum	Minimum	Mean	Per square mile		
August 29-31	8.7	6.6	7.30	0.090	0.01	C
September	8.7	1.5	4.08	0.055	0.06	C
October	290	1.5	53.0	0.716	0.83	B
November	181	3.0	37.5	0.507	0.57	B
December	411	1.5	65.5	0.889	1.02	C
January						
February						
March						
April	1,310	61	327	4.42	4.92	C
May	1,090	34	170	2.30	2.65	C
June	309	21	72.8	0.984	1.10	B

## CANADICE LAKE

## DESCRIPTION

Canadice lake is tributary to Genesee river through Hemlock lake outlet and Honeoye creek. The area drained by the lake forms an irregular rectangle, the lake lying somewhat to the left of the longitudinal axis and the greater portion of the drainage being on the eastern slope. The western slope is narrow and precipitous. Bald hill rises from an altitude of 1,090 feet at the lake to 1,800 feet at the summit and has its axis parallel to the lake at an average distance of three-fourths of a mile from it. The lake has a water-surface area of 1.01 square miles and drains a total area of 12.6 square miles, 8 per cent of which is lake surface.

A weir was constructed at the outlet at the foot of the lake by the city engineer's department of Rochester, N. Y., in February, 1903. The entire yield of the drainage basin passes this weir.

## CANADICE LAKE OUTLET NEAR HEMLOCK

**Location.**— In outlet, at foot of lake, which discharges to Genesee river through Hemlock lake outlet and Honeoye creek.

**Records available.**— April, 1903, to date. Data also in water-supply paper, Surface Water-Supply of the United States, Part IV; St. Lawrence River Basin, published by the United States Geological Survey; also in reports of the city engineer of Rochester, N. Y.

**Drainage area.**— Twelve and six-tenths square miles, of which 1.01 square miles are lake surface.

**Gage.**— Hook gage in channel above weir.

**Computation of discharge.**— In November, 1915, the former timber and plank channel with an overfall weir about fifteen feet long which could be shortened to five feet, was replaced by a concrete construction with an overfall weir at the same elevation with a crest ten feet long with end contraction suppressed, said weir also being capable of being reduced by vertical needles to a five-foot weir with complete end contractions.

**Diversions.**—No water is diverted from Canadice lake above the station.

**Regulation.**—Outflow of lake at dam above weir is controlled by bulkhead and gates.

**Winter flow.**—Pool above weir is free from ice throughout winter.

**Accuracy.**—Observations and computations made with care, the result should be very good.

**Coöperation.**—Data collected and furnished for publication by office of city engineer, Rochester, N. Y.

Mean monthly water-surface and monthly discharge of CANADICE LAKE NEAR  
HEMLOCK, for the nine months ending June 30, 1916  
(Drainage area, 12.6 square miles)

MONTH	Mean elevation of lake above low-water mark	DISCHARGE IN SECOND- FEET		RUN-OFF  Depth in inches on drainage area*
		Mean	Per square mile*	
October.....	1.616	7.543	0.599	0.69
November.....	1.770	†1.105	0.088	0.10
December.....	2.040	11.101	0.881	1.02
January.....	2.336	32.419	2.573	2.97
February.....	1.329	10.196	0.809	0.87
March.....	1.502	24.279	1.927	2.22
April.....	3.059	53.697	4.254	4.75
May.....	3.245	46.228	3.669	4.23
June.....	2.967	37.640	2.987	3.33
For 9 months.....	2.207	24.944	1.980	20.18

\* Computed by State Engineer.

† In November the old plank weir and channel was replaced by a concrete structure. The head-gates were closed during construction and an estimate of the leakage is included above.

NOTE.—As the outlet of the lake is controlled by gates, it is fair to state that the terminal water-surface for the period under consideration (October 1, 1915, to June 30, 1916) was 1.20 feet higher than at beginning, corresponding to a gain in storage of 36,641,000 cubic feet, or a discharge of 1.548 cubic feet per second. This correction applied to the above mean for the period gives 26.492 cubic feet per second, equivalent to a discharge of 2.103 second-feet per square mile of drainage area or a depth of run-off of 21.43 inches on the drainage area.

## OSWEGO-ONEIDA-SENECA RIVER DRAINAGE BASIN

### DESCRIPTION OF BASIN

Oswego river is formed by the union of Seneca and Oneida rivers at Three River Point about twelve miles northwest of Syracuse, N. Y., whence its course is northwestward to Oswego, where it enters Lake Ontario. The length of the river, from the junction to the mouth, is about 20.5 miles and the drainage basin along this distance is a narrow strip of country, moderately rolling. Above the junction of Seneca and Oneida rivers the basin spreads out, attaining an extreme width east and west of about 100 miles and north and south of from 70 to 80 miles. There is, on the whole, a gradual rise from the low, level lands which border Lake Ontario to the north-south ridges which separate the various lakes south of Seneca river and which farther south become merged with the still more elevated country lying along the southern boundary of the Lake Ontario watershed.

The most remarkable feature of the drainage basin is the chain of lakes stretching across its southern border. From west to east the principal lakes are, in order, Canandaigua, Keuka, Seneca, Cayuga, Owasco, Skaneateles and Oneida. These seven lakes include a water-surface of approximately 270 square miles, increased by four smaller lakes — Cross, Onondaga, Otisco and Cazenovia — to about 283 square miles. The larger of the lakes, Oneida, Cayuga and Seneca, are used for steam-towing navigation, having connection with the Erie and Oswego canals, and together with Onondaga will form a part of the New Barge canal system. Cayuga and Seneca lakes are noted for their depth and for the abrupt slopes of their beds. The influence of the lakes on Oswego river is of the utmost importance in contributing to the steadiness of its flow.

## Drainage areas tributary to ONEIDA LAKE AND ONEIDA RIVER \*

LOCALITY	AREA IN SQUARE MILES		
	Place to place	Sub-total	Total
East branch, Fish creek.			
Head to junction with Alder creek	45.40	45.40	
Alder creek	25.70	71.10	
Junction with Alder creek to junction with Point Rock creek	36.70	107.80	
Point Rock creek	19.90	127.70	
Junction with Point Rock creek to junction with Fall brook	4.50	132.20	
Fall brook	12.50	145.70	
Junction with Fall brook to junction with Florence creek	1.30	147.00	
Florence creek	20.40	167.40	
Junction with Florence creek to junction with Furnace creek (Taberg)	1.70	169.10	
Furnace creek	14.40	183.50	
Taberg to junction with West branch, Fish creek	3.00	187.10	
West branch, Fish creek			
Head to lower dam, Williamstown	25.80	25.80	
Williamstown to West Camden	27.10	52.90	
West Camden to junction with Mad river, Camden	14.20	67.10	
Mad river	45.40	112.50	
Camden to junction with Little river	21.60	134.10	
Little river	52.10	186.20	
Little river to McConnellsville	4.00	190.20	
McConnellsville to junction with East branch, Fish creek	11.90	202.10	
Total, East and West branches, Fish creek		389.20	
Junction of East and West branches, Fish creek, to junction with Wood creek	27.80	417.00	417.00
Wood creek (Oneida county).			
Above Erie canal, Rome	10.20	10.20	
Erie canal, Rome, to junction with Mud creek	2.00	12.20	
Mud creek (Oneida county)	20.00	32.20	
Junction with Mud creek to junction with Canada creek	6.40	38.60	
Canada creek	31.00	69.60	
Junction with Canada creek to junction with Stony creek	1.20	70.80	
Stony creek	20.40	91.20	
Junction with Stony creek to junction with Fish creek	31.40	122.60	122.60
Oneida creek			
Head to Peterboro	13.40	13.40	
Peterboro to Falls	6.70	20.10	
Falls to Munnsville	15.60	35.70	
Munnsville to Kenwood	27.30	63.00	
Kenwood to Oneida Castle (State dam)	10.80	73.80	
Oneida Castle to Sconondoa creek, Oneida	2.10	75.90	
Sconondoa creek	34.30	110.20	
Sconondoa creek to Durhamville	4.80	115.00	
Durhamville to mouth	28.00	143.00	143.00
Canaseraga creek (Madison county).			
Head to Perryville	5.70	5.70	
Perryville to Erie canal	9.00	14.70	
Erie canal to Douglas ditch	8.10	22.80	
Cowasselon creek			
Head to Clockville creek	17.20	17.20	
Clockville creek	11.10	28.30	
Clockville creek to Erie canal	5.60	33.80	
Erie canal to mouth of Douglas ditch	39.30	73.10	
Total, all above junction with Douglas ditch		95.90	
Junction with Douglas ditch to Lakeport	3.20	99.10	99.10
Chittenango creek			
Erieville reservoir, water-surface	0.45	0.45	
Erieville reservoir, land drainage	3.30	3.75	
Erieville reservoir to Casenovia lake	30.50	34.25	
Casenovia lake, water-surface	1.70	35.95	
Casenovia lake, land drainage	8.70	44.65	
Casenovia lake to Chittenango falls	14.40	59.05	
Chittenango falls to State dam, Chittenango	17.90	76.95	
State dam to junction with Butternut creek	28.10	105.05	
Butternut creek			
Head to Jamesville reservoir	47.40	47.40	
Jamesville reservoir to State dam	5.70	53.10	
State dam to junction with Limestone creek	19.20	72.30	

\* From U. S. Geological Survey topographic maps.

Drainage areas tributary to ONEIDA LAKE AND ONEIDA RIVER\*— *Continued*

LOCALITY	AREA IN SQUARE MILES		
	Place to place	Sub-total	Total
Chittenango creek — <i>Continued.</i>			
Butternut creek — <i>Continued.</i>			
Limestone creek.			
De Ruyter reservoir, water-surface.....	1.00	1.00	
De Ruyter reservoir, land drainage.....	17.80	18.80	
De Ruyter reservoir, to junction with East branch.....	4.30	23.10	
East, or New Woodstock branch.....	12.60	35.70	
Junction with East branch to junction with West branch.....	34.50	70.20	
West branch, Limestone creek, enters above State feeder dam.....	24.80	95.00	
State dam to junction with Butternut creek.....	18.20	113.20	185.50
Junction with Limestone creek to Chittenango creek.....	1.10	186.60	291.65
Junction with Butternut creek to Bridgeport.....	30.30	321.95	
Bridgeport to Oneida lake.....	4.30	326.25	326.25
Oneida lake drainage through main streams.....		1,107.95	
Big Bay creek.....	26.30		
Little Bay creek.....	11.50		
Scriba creek.....	45.40		
Coast drainage, north shore Oneida lake.....	54.50		
Coast drainage, south shore Oneida lake.....	28.90	166.60	1,274.55
Water-surface, Oneida lake.....	78.00		
Land drainage, Oneida lake.....	1,274.55	1,352.55	
Oneida river.			
Brewerton to Caughdenoy creek.....	4.80	4.80	1,357.35
Caughdenoy creek.....	19.30	24.10	1,376.65
Caughdenoy creek to Oak Orchard.....	25.10	49.20	1,401.75
Mud creek (Onondaga county).....	34.70	83.90	1,436.45
Oak Orchard to Potts creek.....	5.00	88.90	1,441.45
Potts creek.....	22.90	111.80	1,464.35
Six-Mile creek (Oswego county).....	24.00	135.80	1,488.35
Potts creek to Three River Point.....	4.50	140.30	1,492.85

## Drainage areas tributary to SENECA RIVER \*

LOCALITY	AREA IN SQUARE MILES			
	Place to place	Sub-total	Branch total	General total
Mud creek (Ontario county).				
Head to and including Schaffer creek.....	51.31			
Junction with Schaffer creek to junction with Sucker brook, Victor (formerly Ganargua creek).....	25.70	77.01		
Sucker brook.....	20.15	97.16		
Ganargua creek.				
Victor to Erie canal, Macedon.....	26.20	123.36		
Macedon to junction with East Red creek, East Palmyra.....	55.00	178.36		
East Red creek.....	59.50	237.86		
East Red creek to Canandaigua outlet.....	61.37	299.23	209.23	
Canandaigua lake.				
Naples creek.....	48.55	171.97		
West river.....	42.09			
Other land drainage.....	81.34			
Water-surface.....	16.40		188.37	

\* From U. S. Geological Survey topographic maps.

Drainage areas tributary to SENECA RIVER — *Continued*

LOCALITY	AREA IN SQUARE MILES			
	Place to place	Sub-total	Branch total	General total
Canandaigua outlet.				
Foot of the lake to and including Black brook.	50.37	238.74		
Black brook to Flint creek, at Phelps.....	54.34	293.08	293.08	
Flint creek.				
Above Patten.....	31.59			
Patten to Gorham, not including Gorham swamp.....	24.84	56.43		
Gorham swamp.....	5.46	61.89		
Gorham to Orleans.....	25.57	87.46		
Orleans to junction with Canandaigua outlet at Phelps.....	15.21	102.67	395.75	
Phelps to junction with Ganargua creek at Lyons, forming Clyde river.....	48.36	444.11	743.34	
Clyde river.				
Lyons to junction with Seneca river, foot of Cayuga lake.....	141.11	884.45		884.45
Seneca river.				
Seneca lake.				
Keuka lake.				
Land drainage to outlet.....	160.96			
Water-surface.....	17.51	178.47		
Keuka outlet to Seneca lake.....	24.80	203.27		
Catharine creek.				
Above Montour Falls.....	66.46			
Montour Falls to Seneca lake.....	29.91	96.37		
Watkins Glen creek.....	23.53	23.53		
Direct lake drainage.....	317.76	317.76		
Water-surface.....	67.16		708.09	
Seneca river, foot of Seneca lake to Waterloo..	40.90		748.99	
Seneca river, Waterloo to Seneca Falls.....	28.55		777.54	
Seneca river, Seneca Falls to Mud lock, foot of Cayuga lake.....	7.52		785.06	
Cayuga lake.				
Cascadilla creek.....	14.38			
Six-Mile creek.....	50.05			
Buttermilk creek.....	29.16			
Cayuga inlet.....	67.02			
Salmon creek.....	91.13			
Fall creek.				
Above Freeville.....	58.68			
Virgil creek.....	28.00	84.68		
Freeville to Cornell dam.....	30.62	115.20		
Cornell dam to Cayuga lake.....	1.66	116.76		
Taghanic creek.				
Above Halseyville.....	56.96			
Halseyville to Taghanic Falls.....	10.40	67.36		
Taghanic Falls to Cayuga lake.....	0.39	67.75		
Other Cayuga lake drainage.....	275.04	720.29		
Cayuga lake, water-surface.....	66.31	786.60	1,571.60	
Seneca river, Cayuga lake to junction with Clyde river.....	15.42		1,587.02	2,471.47
Seneca river, junction with Clyde river to junction with Owasco outlet.....	146.23			2,617.70
Owasco lake.				
Owasco inlet, above Moravia.....	74.33			
Moravia to Owasco lake.....	42.92	117.25		
Direct drainage to lake.....	76.24	193.49		
Foot of lake to State dam.....	0.98	194.47		
Water-surface.....	10.40	204.87		
Owasco outlet to junction with Seneca river.	16.73	221.66		2,839.30
Seneca river, junction with Owasco outlet to junction with Skaneateles outlet.....	98.70			2,938.00
Skaneateles lake.				
Land drainage to foot.....	58.41			
Water-surface.....	14.13	72.54		
Foot of lake to Willow Glen.....	1.84	74.38		
Willow Glen to Seneca river.....	16.69	91.07		3,029.07
Seneca river, Skaneateles outlet to Carpenter brook.....	25.50			3,054.57



Drainage areas tributary to SENECA RIVER — *Concluded*

LOCALITY	AREA IN SQUARE MILES			
	Place to place	Sub-total	Branch total	General total
Seneca River — <i>Continued</i> .				
Carpenter brook.....	18.70	.....	.....	3,073.27
Seneca river, Carpenter brook to Baldwinsville.	48.10	.....	.....	3,121.37
Seneca river, Baldwinsville to Onondaga outlet.	17.80	.....	.....	3,139.17
Onondaga lake.				
Otisco lake, land drainage to foot.....	41.40	.....	.....	
Otisco lake, water-surface.....	3.30	44.70	.....	
Nine-Mile creek, Onondaga county, (Otisco outlet) to Onondaga lake.....	74.00	118.70	.....	
Onondaga creek.				
Above junction with West brook.....	40.60	.....	.....	
Junction with West brook to inflow to Onondaga lake.....	65.30	105.90	.....	
Other land drainage to Onondaga lake.....	59.10	283.70	.....	
Onondaga lake, water surface.....	4.70	288.40	.....	
Onondaga outlet, lake to Seneca river.....	3.00	291.40	.....	3,430.57
Seneca river, Onondaga outlet to Belgium.....	10.12	.....	.....	3,440.69
Seneca river, Belgium to Three River Point.....	4.40	.....	.....	3,445.09

## Drainage areas tributary to OSWEGO RIVER \*

LOCALITY	AREA IN SQUARE MILES		
	Place to place	Total from Three River Point	Total drainage basin
Oneida river, above Three River Point.....	.....	.....	1,493.00
Seneca river, above Three River Point.....	.....	.....	3,445.00
Oswego river at Three River Point.....	.....	.....	4,938.00
Three River Point to Phoenix.....	2.32	2.32	4,940.32
Phoenix to Hinmansville.....	17.58	19.90	4,957.90
Hinmansville to Ox creek.....	17.05	37.15	4,975.15
Ox creek.....	33.68	70.83	5,008.83
Ox creek to upper dam, Fulton.....	9.15	79.98	5,016.98
Fulton to Neatahwanta creek.....	9.15	89.13	5,027.13
Neatahwanta creek.....	21.92	111.05	5,049.05
Neatahwanta creek to Black creek.....	1.01	112.06	5,050.06
Black creek.....	37.93	149.99	5,087.99
Black creek to Battle Island.....	0.92	150.91	5,088.91
Battle Island to Minetto.....	2.11	153.02	5,091.02
Minetto to High dam.....	4.87	157.89	5,095.89
High dam to Oswego dam.....	1.22	159.11	5,097.11
Oswego dam to Lake Ontario.....	1.21	160.32	5,098.32

\* From U. S. Geological Survey topographic maps.

## OSWEGO RIVER

## DESCRIPTION

The drainage area tributary to Oswego river, exclusive of Seneca and Oneida rivers, is 160 square miles. This area comprises chiefly moderately-rolling, cultivated upland, having a good depth of soil overlying the rock, which, as a rule, is visible only in the bed of the stream. A portion of the area is drained through lakes and marshes. The run-off from the direct drainage to Oswego river is moderate and the regimen differs but little from that resulting from the inflow of the two main tributaries — the Oneida and Seneca.

The river is canalized for practically its entire length by the Barge canal improvement and almost all of the 118.6 feet drop between canal pool at Three River Point and low water in Lake Ontario occurs at six dams, all having bulkhead gates for power purposes, the upper two of which have large Taintor gates for surface regulation. The Battle Island dam and old High dam have been drowned out by new structures — dam No. 5 at Minetto and dam No. 6 (new High dam) above Oswego, respectively.

In the following series of tables there are given records of the daily elevation of water-surface of the Oswego river at different gaging stations for the nine months ending June 30, 1916. Owing to the completion of canal construction the locations at which certain water-surface elevations were taken have been shifted, in general locations on the finished structures, where in some cases elevations had also been taken. In such cases, when possible, earlier gagings at the new location are published as the beginning of a new record. Locations of old and new gages and reasons for change are briefly noted.

The tables of elevations of water-surface are arranged in order, proceeding downstream from Three River Point to Lake Ontario. The water-surface is in general read to the nearest tenth of a foot, usually either on a staff gage or by measuring down from a reference point.

## OSWEGO RIVER ABOVE DAM AT PHOENIX

Records published previous to 1914 as "above dam at Phoenix" are of "East line gage," located on the east side of the river, March 1, 1912, to May 5, 1913, between 200 and 250 feet above east bulkhead, and May 6, 1913, to December 31, 1914, at the shore end of east bulkhead. This gage was discontinued and the record is taken at the upper end of the guide-wall to Barge canal lock No. 1. Gagings which may be considered the beginning of this new record have been taken from May 18, 1912, to December 31, 1914, at the upper end of lock No. 1. Gage read once daily — at 9:00 A. M. — previous to April 1, 1916, since that date, twice daily.

Barge canal construction has replaced the old crest at about Elev. 359.1 with two sections of fixed crest at Elev. 363.0 running diagonally upstream to six Taintor gates, each twenty-eight feet six inches clear span, immediately below the Lock street bridge.

Daily elevation of water-surface (B. C. Datum) of OSWEGO RIVER ABOVE DAM AT PHOENIX, for the nine months ending June 30, 1916. E. C. Ansley and C. E. Greenfield, Observers

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	363.8	363.8	363.6	363.9	364.2	364.3	365.15	363.9	364.05
2.....	363.8	363.7	363.6	364.1	364.2	364.4	365.65	364.2	363.8
3.....	363.8	363.6	363.6	364.4	364.2	364.3	365.85	364.15	363.85
4.....	363.8	363.7	363.7	364.4	364.1	364.3	365.9	364.0	364.15
5.....	363.9	363.7	363.7	364.4	364.1	364.4	365.9	363.9	363.8
6.....	364.1	363.7	363.6	364.8	364.1	364.3	365.9	363.85	363.95
7.....	364.1	363.7	363.7	364.9	364.1	364.3	365.8	364.05	363.8
8.....	364.0	363.7	363.6	364.9	364.2	364.3	365.7	363.95	363.65
9.....	363.8	363.7	363.7	365.0	364.5	364.3	365.65	364.0	363.7
10.....	363.9	363.6	363.7	364.8	364.4	364.1	365.5	364.15	363.6
11.....	363.8	363.7	363.7	364.4	364.3	364.1	365.4	363.95	363.7
12.....	363.7	363.6	363.6	364.2	364.2	364.3	365.25	364.0	363.55
13.....	363.9	363.6	363.7	364.1	364.3	364.2	365.1	363.9	363.7
14.....	363.7	363.6	363.7	364.0	364.3	364.1	365.05	364.0	363.75
15.....	363.7	363.6	363.5	364.2	364.1	364.1	364.9	363.95	363.85
16.....	363.8	363.7	363.9	364.1	364.1	364.2	364.95	363.8	363.9
17.....	363.8	363.7	364.0	364.1	364.2	364.1	364.65	364.3	363.75
18.....	363.8	363.8	363.9	364.2	364.2	364.1	364.5	364.45	363.9
19.....	363.8	364.0	363.8	364.4	364.1	364.3	364.4	364.45	363.9
20.....	363.8	363.9	363.7	364.6	364.3	364.1	364.35	364.3	363.8
21.....	363.8	363.9	363.8	364.3	364.1	364.0	364.25	364.5	363.85
22.....	363.9	363.7	363.7	364.2	364.0	364.0	364.2	364.15	363.9
23.....	363.8	363.8	363.7	364.4	364.1	364.0	364.4	364.1	363.85
24.....	363.9	363.8	363.7	364.3	364.0	363.8	364.15	364.1	363.85
25.....	363.7	363.8	363.8	364.2	364.1	363.8	364.2	364.0	363.95
26.....	363.7	363.7	364.0	364.2	364.2	364.1	364.1	363.9	363.7
27.....	363.7	363.6	364.0	364.2	364.3	363.7	364.05	363.85	363.7
28.....	363.6	363.6	364.1	364.4	363.9	363.6	363.9	363.85	363.75
29.....	363.6	363.7	364.1	364.4	364.2	363.8	363.9	363.85	363.75
30.....	363.7	363.6	364.0	364.3	.....	364.2	364.1	363.95	363.7
31.....	363.9	.....	363.9	364.2	.....	364.8	.....	363.9	.....

## OSWEGO RIVER BELOW DAM AT PHOENIX

The record of water-surface, "1,600 feet below dam at Phoenix," is that of the "North line gage" and has been taken as follows: November 1, 1910, to February 9, 1914, at junction of canal and river about 1,600 feet below the dam; February 10, 1914, to May 14, 1914, in river at temporary bridge about 800 feet below dam; May 15, 1914, and thereafter, in canal at lower end of Barge canal lock No. 1, at which location the surface is practically the same as at the junction of the canal and river.

This gage was read once daily — at 9:00 A. M. — previous to April 1, 1916, since that date, twice daily — morning and afternoon.

Daily elevation of water-surface (B. C. Datum) of OSWEGO RIVER, 1,600 FEET BELOW DAM AT PHOENIX, for the nine months ending June 30, 1916. E. C. Ansley and C. E. Greenfield, Observers

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	354.1	355.0	354.9	355.3	356.7	356.6	361.15	358.2	356.8
2.....	354.7	354.6	354.8	355.9	356.5	356.4	362.35	357.8	356.95
3.....	354.7	354.4	354.9	357.3	356.4	355.9	362.75	357.9	356.7
4.....	354.8	354.5	354.8	357.3	356.2	355.8	362.9	357.55	356.5
5.....	355.0	354.6	354.9	357.2	356.5	356.3	362.9	357.3	356.25
6.....	355.4	354.9	354.9	357.9	355.8	355.8	362.8	357.0	356.7
7.....	355.7	354.7	354.7	358.3	355.7	355.8	362.7	356.75	356.7
8.....	355.5	354.6	354.6	358.3	355.5	355.8	362.5	356.5	357.25
9.....	355.4	354.8	354.2	358.3	356.3	355.9	362.25	355.95	357.1
10.....	354.9	354.7	354.3	358.2	356.5	356.1	362.2	355.95	356.85
11.....	355.1	354.7	355.0	357.9	356.7	355.5	361.6	355.85	356.3
12.....	355.0	354.6	354.4	357.3	356.2	355.5	361.35	355.2	356.5
13.....	355.0	354.5	354.8	357.2	356.0	356.1	361.05	354.85	356.6
14.....	355.3	354.3	354.7	356.9	357.0	355.9	360.85	354.5	356.3
15.....	355.0	354.5	354.9	356.3	357.1	356.2	360.65	354.8	356.05
16.....	355.0	354.7	355.0	356.9	356.3	356.0	360.35	353.95	356.35
17.....	354.9	355.0	355.3	356.5	355.5	356.3	360.2	356.4	357.2
18.....	355.0	355.1	355.4	356.6	355.3	356.3	359.85	357.4	356.85
19.....	355.4	355.4	355.6	359.7	356.3	356.3	359.6	357.5	356.4
20.....	355.5	355.1	355.8	359.7	357.8	356.5	359.5	357.95	357.1
21.....	355.6	355.6	355.9	359.5	357.6	355.8	359.1	357.85	357.05
22.....	355.5	355.6	355.7	358.4	357.4	355.7	359.05	358.05	357.15
23.....	355.4	355.6	355.5	357.1	356.7	355.5	358.9	358.45	357.15
24.....	354.9	355.5	355.5	356.8	356.1	355.6	359.1	358.65	356.8
25.....	355.2	355.5	356.0	356.4	355.8	355.6	359.05	358.55	357.15
26.....	355.1	355.4	356.4	356.0	355.8	355.5	358.95	358.05	356.85
27.....	355.0	355.5	356.8	356.0	356.1	356.3	358.8	358.0	356.45
28.....	354.8	354.6	356.4	356.8	356.3	355.8	358.75	357.65	356.3
29.....	354.7	355.0	356.5	357.0	356.3	356.8	358.6	357.7	356.25
30.....	354.6	354.8	356.0	356.3	.....	357.8	358.3	357.65	356.15
31.....	354.6	.....	355.5	356.4	.....	359.4	.....	357.15	.....

## OSWEGO RIVER AT HINMANSVILLE

The Hinmansville highway bridge across the Oswego river is about three miles north of Phoenix. This station was established April 13, 1904, and discontinued February 25, 1914, owing to the removal of the old highway bridge. During this period a chain gage located on the downstream side of the bridge pier was read. The station was reestablished January 1, 1915. A direct-reading staff gage is located on the south abutment of a highway bridge over the mouth of the creek entering the river from the west immediately above the abutment of the Hinmansville bridge. This gage is read once daily—about 9:30 A. M. Object of this gage is to obtain water-surface elevations only.

Daily elevation of water-surface (B. C. Datum) of OSWEGO RIVER AT HINMANSVILLE BRIDGE, NEAR PHOENIX, for the nine months ending June 30, 1916. Leon Hallenbeck, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	353.9	353.7	354.1	354.7	355.3	355.4	355.6	355.7	355.5
2.....	354.3	353.8	354.1	354.9	355.0	355.4	359.7	355.7	356.0
3.....	354.0	352.8	354.1	355.8	354.7	355.2	359.9	356.0	355.2
4.....	354.1	353.6	354.3	355.7	354.7	355.4	359.9	355.5	355.7
5.....	354.4	353.9	354.1	355.5	354.9	355.4	359.9	355.5	355.3
6.....	354.9	354.0	354.0	356.0	354.7	355.2	359.8	355.5	355.4
7.....	354.8	354.2	353.8	356.4	354.9	355.0	359.7	355.5	355.7
8.....	354.8	353.9	353.8	356.7	355.3	354.9	359.9	354.8	356.1
9.....	354.7	354.0	353.5	356.0	355.5	355.1	359.5	354.5	355.5
10.....	354.3	353.9	353.8	355.5	355.7	354.8	359.1	354.5	355.1
11.....	354.1	354.0	354.4	355.7	355.7	354.6	358.7	354.4	355.3
12.....	354.2	353.9	354.0	355.5	355.4	354.6	358.5	354.0	355.0
13.....	354.5	353.0	354.3	355.7	355.4	354.6	358.4	353.5	355.1
14.....	354.7	353.8	354.4	355.2	356.4	354.9	358.1	354.2	355.0
15.....	354.3	354.0	354.6	355.2	356.0	355.1	357.9	353.8	354.8
16.....	354.3	354.2	354.7	355.7	354.9	354.9	358.0	353.4	355.5
17.....	354.0	354.5	355.1	356.5	354.5	355.2	357.7	355.4	356.0
18.....	354.3	354.5	354.8	357.3	354.5	355.3	357.3	355.5	355.7
19.....	354.7	354.3	355.0	357.9	356.2	355.7	357.1	355.7	355.4
20.....	354.5	354.5	355.0	358.0	356.8	355.5	357.2	356.2	355.7
21.....	354.3	354.7	354.8	357.4	356.6	355.3	356.7	356.5	355.6
22.....	354.3	354.8	354.9	356.6	356.6	355.0	356.7	356.5	355.7
23.....	354.2	354.7	355.0	355.9	355.7	355.1	356.9	356.6	355.7
24.....	354.2	354.9	354.8	355.7	355.3	354.9	357.0	356.8	355.5
25.....	354.1	354.7	355.0	355.2	354.8	355.0	356.7	356.6	356.1
26.....	354.0	354.7	355.1	354.8	354.6	355.4	356.4	356.1	355.7
27.....	353.9	354.8	355.1	354.8	355.4	354.8	356.4	356.3	355.5
28.....	353.8	354.5	355.4	355.4	355.5	354.8	356.6	356.1	355.3
29.....	353.8	354.5	355.2	355.2	354.8	355.5	356.4	356.9	355.2
30.....	353.2	354.2	355.0	354.9	.....	355.6	356.4	356.2	355.1
31.....	354.0	.....	354.5	354.8	.....	357.3	.....	355.9	.....

## OSWEGO RIVER AT OX CREEK

Ox creek enters the Oswego river from the west four miles upstream from the upper dam at Fulton.

A direct-reading staff gage is located on the downstream end of the north abutment of the Fulton-Phoenix highway bridge over Ox creek about seven hundred feet above the mouth of the creek. During floods in the creek there may be some slight drop between the gage and the river. The gage is read once daily — at about 11:00 A. M.— to quarter-tenths of a foot.

This station was established April 12, 1904. Its object is to obtain water-surface elevations only.

Daily elevation of water-surface (B. C. Datum) of Oswego River at Mouth of Ox Creek, near Fulton, for the nine months ending June 30, 1916. B. M. Wilcox, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	353.50	353.65	353.70	354.00	354.40	353.72	356.65	354.40	354.20
2.....	353.95	353.50	353.70	354.43	353.85	354.00	357.60	354.10	354.00
3.....	353.80	353.30	353.73	354.80	353.88	354.10	357.60	354.50	354.22
4.....	353.95	353.50	353.60	354.88	353.80	354.25	357.75	354.20	354.68
5.....	354.00	353.65	353.78	354.40	354.10	354.60	357.75	354.20	354.10
6.....	354.40	353.83	353.65	354.90	353.78	354.70	357.70	354.12	354.35
7.....	354.25	353.80	353.50	355.25	354.08	354.70	357.60	354.45	354.20
8.....	354.18	353.60	353.38	355.43	354.23	354.62	357.45	353.75	354.00
9.....	354.10	353.60	353.10	355.58	355.00	354.60	357.55	353.50	354.00
10.....	353.48	353.60	353.33	355.50	355.18	354.45	357.10	353.80	354.50
11.....	353.75	353.68	353.58	354.73	355.10	353.70	356.85	353.68	354.50
12.....	353.80	353.60	353.63	354.30	354.68	354.58	356.80	353.40	354.10
13.....	354.10	353.55	353.90	354.68	354.30	354.30	356.45	353.15	354.00
14.....	354.13	353.40	353.68	354.10	354.50	354.30	356.32	353.90	354.35
15.....	353.85	353.40	353.60	354.28	354.30	354.25	356.20	353.70	353.85
16.....	354.03	353.70	353.50	354.50	354.10	354.20	356.20	354.20	354.30
17.....	354.03	353.85	353.55	355.20	354.05	354.15	355.85	354.40	354.70
18.....	354.08	354.00	353.78	354.40	353.90	354.30	355.35	354.45	355.05
19.....	354.20	354.15	354.38	355.60	354.00	355.10	355.35	354.50	355.00
20.....	354.15	354.40	354.63	355.05	354.65	354.70	355.50	354.85	354.95
21.....	354.28	354.65	354.70	353.90	354.60	354.18	355.32	355.22	354.45
22.....	354.00	354.15	354.50	354.05	354.60	354.15	355.30	354.60	354.50
23.....	354.00	354.15	354.45	354.15	354.00	354.10	355.40	354.92	354.48
24.....	353.73	354.13	354.30	354.20	353.75	354.05	355.00	355.35	354.45
25.....	353.73	354.15	354.50	354.25	353.60	354.32	355.08	355.20	355.00
26.....	353.70	354.20	354.80	354.05	353.60	354.65	355.00	354.50	354.70
27.....	353.65	354.28	355.00	354.08	353.53	354.20	354.70	354.70	354.45
28.....	353.50	353.50	354.50	354.95	353.45	354.50	354.90	354.60	354.40
29.....	353.28	353.70	354.45	354.80	353.40	354.32	354.55	354.10	354.85
30.....	353.00	353.70	353.95	354.83	.....	354.55	354.80	355.10	354.00
31.....	353.70	.....	353.55	354.08	.....	354.45	.....	354.50	.....

## OSWEGO RIVER ABOVE UPPER DAM, FULTON

The record previously published as "above Oswego Falls Dam, Fulton," is from a gage located a short distance above the dam on the river side of the upper approach wall to Barge canal lock No. 2, and was discontinued, November 30, 1914. Gagings on the other side of the wall, *i. e.* in the approach to the lock, giving the water-surface above the dam more correctly than those on the river side of the wall, were begun June 7, 1912. A direct-reading staff gage, located just above the upper gates of Barge canal lock No. 2, was read during October and November at 10 A. M.; during December, at 8:45 A. M.; during January, February and March, at 9 A. M.; and from April to June, inclusive, at 8 A. M. and 4 P. M.

Barge canal construction has raised the crest from Elev. 347.8 to Elev. 352.8 and replaced part of the crest by six Taintor gates, each of twenty-six feet eight inches clear span.

Daily elevation of water-surface (B. C. Datum) of OSWEGO RIVER ABOVE UPPER DAM, FULTON, for the nine months ending June 30, 1916. Ed. L. Parker, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	353.64	353.85	353.89	353.12	354.2	354.1	355.50	353.55	353.68
2.....	354.00	353.48	353.70	353.84	353.5	354.4	356.30	352.55	353.90
3.....	353.85	353.40	353.80	354.67	353.5	354.2	356.18	353.90	353.90
4.....	353.75	353.52	353.80	354.29	353.4	354.5	356.15	353.52	354.20
5.....	354.04	353.10	353.72	354.05	354.1	354.5	356.15	353.62	353.70
6.....	354.40	353.85	353.62	354.30	353.5	354.4	356.12	353.58	353.80
7.....	354.29	353.85	353.50	354.57	353.4	354.0	355.98	353.92	353.80
8.....	354.20	353.64	353.49	354.45	353.5	354.2	355.85	353.68	354.06
9.....	354.15	353.75	353.15	355.03	353.8	354.4	356.20	353.30	353.70
10.....	354.25	353.70	353.20	355.03	354.4	354.3	355.65	353.55	354.00
11.....	353.76	353.75	353.12	354.5	354.45	354.7	355.42	353.55	354.25
12.....	353.96	353.70	353.75	353.9	353.9	354.1	355.20	353.52	353.82
13.....	354.00	353.51	353.80	354.1	354.0	354.5	355.05	353.48	353.85
14.....	354.35	353.55	353.75	353.9	353.5	353.1	354.85	353.90	354.18
15.....	354.00	353.40	353.30	353.5	353.8	354.2	354.78	353.62	353.42
16.....	354.05	353.69	353.30	353.2	354.0	353.9	355.25	353.62	354.05
17.....	354.10	353.90	353.75	353.5	353.4	353.9	354.75	354.40	354.40
18.....	354.02	353.05	354.20	353.7	353.7	354.0	354.40	354.22	354.62
19.....	354.32	354.30	354.25	355.5	353.4	354.8	354.22	353.92	354.02
20.....	354.15	353.90	354.60	355.6	354.3	354.7	354.60	354.20	354.20
21.....	354.30	354.50	354.60	354.7	354.0	354.8	353.80	354.40	353.98
22.....	354.04	354.25	354.50	353.1	354.3	354.0	354.20	354.02	353.98
23.....	353.90	354.10	354.40	353.6	354.2	353.8	354.45	354.40	353.95
24.....	353.73	354.17	354.30	353.5	354.7	353.7	353.90	354.62	354.00
25.....	353.70	354.27	354.45	353.9	354.5	354.0	354.15	354.48	354.72
26.....	353.80	354.18	354.78	353.9	354.1	354.5	354.00	353.68	354.30
27.....	353.65	354.28	354.74	353.8	354.4	354.8	353.82	354.05	354.10
28.....	353.54	353.38	354.30	353.9	353.5	353.9	354.02	354.22	353.75
29.....	353.40	353.80	354.29	354.5	353.1	354.0	353.95	353.95	353.95
30.....	352.70	353.75	353.85	353.6	.....	354.0	353.90	354.75	354.00
31.....	353.85	.....	353.40	353.6	.....	354.9	.....	353.98	.....

## OSWEGO RIVER BELOW UPPER DAM, FULTON

This station was established February 11, 1913, as gage "No. 66 about 2,300 feet above lower dam," Fulton, which is practically the same location as the existing direct-reading staff gage at the end of the west lower approach wall to Barge canal lock No. 2. This gage, to obtain water-surface elevations only, was read during October and November at 9:45 A. M.; during December to March, inclusive, at 9 A. M.; and during April, May and June, at 8 A. M. and 4 P. M.

Daily elevation of water-surface (B. C. Datum) of OSWEGO RIVER BELOW UPPER DAM, FULTON, for the nine months ending June 30, 1916. Ed. L. Parker, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1	335.68	336.65	336.28	336.92	337.45	336.4	339.75	338.40	337.72
2	335.78	336.30	336.27	337.61	337.5	336.5	340.40	338.12	337.70
3	336.85	336.08	336.26	337.85	337.45	336.6	340.40	338.18	337.72
4	336.15	336.01	336.20	337.90	337.4	336.3	340.38	338.08	338.08
5	336.25	336.05	337.30	338.00	337.4	336.2	340.32	337.82	337.68
6	336.29	336.10	336.25	338.10	337.3	336.5	340.35	337.75	337.62
7	336.75	336.95	336.20	338.30	337.0	336.45	340.25	338.12	337.91
8	336.65	336.25	336.20	338.22	336.6	336.35	340.15	337.20	338.08
9	336.55	336.20	336.10	338.50	336.75	336.2	340.50	337.00	337.60
10	337.20	336.27	335.40	338.00	336.85	336.2	340.05	337.32	337.45
11	336.45	336.28	335.88	338.0	336.8	336.3	339.85	337.02	338.15
12	336.33	336.10	336.90	337.8	336.8	336.0	339.72	336.32	337.30
13	336.14	335.90	335.85	337.5	336.45	336.6	339.62	336.35	337.48
14	336.20	336.90	336.00	337.35	336.7	336.5	339.52	336.65	337.72
15	336.20	336.20	335.90	337.0	337.2	336.52	339.30	336.52	337.30
16	336.30	336.10	335.30	336.7	336.52	336.1	339.70	335.25	337.48
17	336.95	336.25	335.45	336.6	336.5	336.5	339.20	337.32	337.62
18	336.35	336.28	336.05	336.5	336.4	336.2	339.00	337.85	338.38
19	336.55	336.50	337.35	336.4	336.25	335.7	338.82	338.00	337.60
20	336.68	336.60	336.62	336.7	336.87	336.05	338.82	338.22	337.82
21	336.90	337.25	336.63	337.1	336.4	336.25	338.80	338.68	337.75
22	336.70	336.81	336.55	337.0	336.5	336.4	338.65	338.48	337.85
23	336.72	336.67	336.55	337.05	336.3	336.45	339.25	338.40	337.85
24	337.15	336.71	336.53	337.2	336.2	336.45	338.65	338.38	337.72
25	336.70	336.78	337.40	337.3	336.32	336.35	338.75	338.35	338.55
26	336.70	336.73	337.78	337.2	336.4	336.4	338.68	338.38	337.25
27	336.55	336.70	337.40	337.1	336.25	337.2	338.55	338.32	337.40
28	336.53	337.30	337.35	337.2	336.4	337.4	338.52	338.55	337.30
29	336.30	336.49	337.32	337.7	336.0	337.6	338.60	338.05	337.55
30	336.45	336.20	337.10	337.5	.....	338.3	338.90	337.90	337.15
31	337.00	.....	337.00	337.3	.....	339.0	.....	337.85	.....



## OSWEGO RIVER ABOVE LOWER DAM, FULTON

This station was established December 9, 1909, to obtain water-surface elevations only. The record has been taken at one or the other of two gages, giving practically the same readings, *i. e.* gage No. 54 on west bank about 600 feet above the dam and gage No. 64 on east side of river about 700 feet above dam.

A direct-reading staff, is at present located on the east side of the river on the retaining wall just inside the south end of the open docking approach above Barge canal lock No. 3. This gage was read once daily — about 9:00 A. M. — previous to April 1, 1916, since that date, twice daily — at 8:00 A. M. and 4 P. M.

Old crest of lower dam at Fulton, elevation 331.8, has been raised to elevation 335.0 by Barge canal construction.

Daily elevation of water-surface (B. C. Datum) of OSWEGO RIVER ABOVE LOWER DAM, FULTON, for the nine months ending June 30, 1916. H. H. Carlin, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	335.65	336.60	336.35	336.90	337.55	336.4	339.60	338.32	337.70
2.....	335.78	336.27	336.36	337.57	337.5	336.5	340.35	338.08	337.72
3.....	336.84	336.05	336.38	337.90	337.45	336.6	340.42	338.20	337.72
4.....	336.20	335.99	336.20	337.85	337.4	336.3	340.40	338.05	338.72
5.....	336.25	336.00	337.25	337.95	337.5	336.2	340.38	337.78	337.68
6.....	336.40	336.05	336.32	338.15	337.25	336.5	340.35	337.72	337.55
7.....	336.72	336.95	336.35	338.30	337.0	336.45	340.28	338.20	337.82
8.....	336.65	336.25	336.20	338.18	336.55	336.35	340.18	337.28	338.00
9.....	336.55	336.18	336.08	338.50	336.7	336.2	340.45	337.10	337.68
10.....	337.05	336.25	335.42	338.00	336.8	336.2	340.02	337.30	337.68
11.....	336.44	336.28	335.85	338.05	336.75	336.3	339.85	337.08	338.08
12.....	336.33	336.08	336.85	337.90	336.8	336.0	339.75	336.35	337.28
13.....	336.12	335.90	335.80	337.50	336.45	336.6	339.60	336.40	337.40
14.....	336.22	336.85	336.00	337.42	336.7	336.5	339.60	336.70	337.88
15.....	336.23	336.19	335.89	337.02	337.2	336.5	339.40	336.25	337.38
16.....	336.35	336.10	335.20	336.68	336.5	336.1	339.75	334.85	337.25
17.....	336.95	336.20	335.38	337.00	336.45	336.2	339.12	337.50	337.75
18.....	336.32	336.35	336.00	336.50	336.35	336.7	338.88	337.72	338.38
19.....	336.52	336.55	337.32	336.25	336.2	336.0	338.82	338.05	337.55
20.....	336.69	336.65	336.65	336.50	336.85	336.2	338.82	338.12	337.78
21.....	336.85	337.25	336.60	336.85	336.4	336.4	338.68	338.78	337.72
22.....	336.75	336.81	336.58	337.0	336.48	336.4	338.68	338.50	337.82
23.....	336.70	336.67	336.50	337.1	336.3	336.45	339.20	338.4	337.78
24.....	337.10	336.72	336.50	337.1	336.2	336.4	338.82	338.28	337.65
25.....	336.70	336.76	337.38	337.2	336.3	336.35	338.70	338.30	338.48
26.....	336.67	336.78	337.75	337.1	336.4	336.4	338.62	338.25	337.30
27.....	336.55	336.65	337.40	337.1	336.25	337.2	338.52	338.20	337.42
28.....	336.52	337.25	337.33	337.05	336.38	337.4	338.48	338.62	337.48
29.....	336.52	336.50	337.30	337.8	336.0	337.6	338.58	338.02	337.42
30.....	336.45	336.33	337.10	337.45	.....	338.3	338.85	337.90	337.18
31.....	337.00	.....	337.00	337.2	.....	339.0	.....	337.85	.....

## OSWEGO RIVER BELOW LOWER DAM, FULTON

This station was established April 1, 1909, as gage No. 47 at end of east lower approach wall to and about 1,100 feet below Barge canal lock No. 3. The gage is at present located on the east lower approach wall immediately below lock No. 3 and under the Oneida street bridge. The gage, a direct-reading staff, was read during October and November at 8:40 A. M.; during December, at 9:25 A. M.; during January, February and March, at 10 A. M.; and during April, May and June, at 8 A. M. and 4 P. M. The record obtained at these gages is the elevation of the river at its junction with the canal at the lower end of a dike separating the canal and river for a distance of about 3,500 feet below lock No. 3.

Daily elevation of water-surface (B. C. Datum) of OSWEGO RIVER BELOW LOWER DAM, FULTON, for the nine months ending June 30, 1916. H. H. Carlin, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1	308.30	308.89	308.75	311.02	310.85	310.2	314.4	312.25	310.98
2	308.72	308.75	308.95	310.40	310.85	310.1	315.15	311.78	311.02
3	308.95	308.73	309.05	311.28	310.7	310.0	315.70	311.80	310.90
4	309.00	308.55	308.85	311.87	310.5	309.7	315.70	311.70	310.45
5	309.18	308.70	309.00	311.75	310.7	309.6	315.70	311.38	310.48
6	309.38	308.69	308.95	311.91	310.35	310.0	315.65	311.18	310.68
7	309.65	308.33	308.70	312.15	310.2	309.9	315.50	310.65	311.28
8	309.63	308.65	308.55	312.73	310.1	309.75	315.30	310.48	310.75
9	309.50	308.57	308.40	313.90	310.2	309.7	314.92	310.15	310.88
10	309.75	308.58	308.17	314.55	310.2	309.7	315.00	309.95	310.72
11	309.30	308.50	308.50	313.93	310.15	309.6	314.65	310.05	310.22
12	310.45	308.55	308.15	313.1	311.6	309.2	314.48	309.00	310.40
13	308.84	308.50	308.60	312.7	311.3	310.0	314.25	308.80	310.55
14	308.95	308.36	308.93	312.4	311.6	309.9	314.10	308.30	310.52
15	308.72	308.55	309.20	313.25	311.95	309.9	313.95	309.08	310.38
16	308.65	308.60	308.85	312.9	311.0	309.8	313.38	308.95	310.38
17	308.60	308.70	308.85	313.5	310.8	310.4	313.62	310.35	311.15
18	308.75	308.75	309.20	314.05	310.5	310.1	313.20	311.55	310.98
19	308.85	308.80	309.10	313.45	310.3	309.6	313.15	311.98	310.88
20	308.78	408.70	309.30	313.7	310.9	309.95	313.08	311.85	311.30
21	309.20	308.75	309.20	313.1	310.85	309.6	312.95	311.72	311.28
22	309.18	309.20	309.20	313.2	310.95	309.7	312.68	312.32	311.32
23	309.28	309.05	308.83	313.1	310.7	309.55	313.38	312.40	311.25
24	309.00	308.99	308.84	312.9	310.55	409.7	313.22	312.30	311.10
25	309.27	308.85	308.70	312.5	310.07	309.6	313.05	312.20	311.20
26	309.12	309.03	309.75	311.5	310.4	309.65	312.88	312.18	310.88
27	309.00	309.10	310.45	310.9	310.3	310.2	312.78	312.00	310.62
28	308.95	309.20	310.43	310.95	310.2	310.4	312.68	311.42	310.68
29	308.85	309.05	310.30	310.9	309.5	310.6	312.50	311.35	310.45
30	308.52	308.80	310.88	310.6	.....	311.9	311.92	311.35	310.22
31	308.50	.....	311.00	310.45	.....	313.35	.....	311.35	.....

## OSWEGO RIVER AT WATERHOUSE CREEK, FULTON

Waterhouse creek enters the Oswego river from the east near the northern edge of the city of Fulton, about a mile below the lower dam. This station was established April 9, 1904, to obtain water-surface elevations only and abandoned March 31, 1916. The present gage is a direct-reading staff located on the south bank of the creek immediately below the highway bridge over the mouth of the creek. This gage was read once daily during October and November at 9:10 A. M.; during December, at 10 A. M.; and during January, February and March, at 10:30 A. M.

Daily elevation of water-surface (B. C. Datum) of OSWEGO RIVER AT MOUTH OF WATERHOUSE CREEK, FULTON, for the nine months ending June 30, 1916. E. Wells and C. Smith, Observers

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	308.37	308.90	308.76	311.10	310.78	310.2	.....	.....	.....
2.....	308.75	308.77	308.96	310.50	310.82	310.1	.....	.....	.....
3.....	308.92	308.83	309.05	311.40	310.70	310.00	.....	.....	.....
4.....	309.00	308.68	308.88	311.95	310.50	309.7	.....	.....	.....
5.....	302.21	308.77	309.00	311.83	310.65	309.6	.....	.....	.....
6.....	309.45	308.67	308.99	311.98	310.30	310.0	.....	.....	.....
7.....	309.64	308.42	308.71	312.22	310.20	309.9	.....	.....	.....
8.....	303.63	308.67	308.60	312.80	210.00	309.75	.....	.....	.....
9.....	309.50	308.60	308.44	314.10	310.15	302.7	.....	.....	.....
10.....	309.81	308.59	308.15	314.80	310.20	309.7	.....	.....	.....
11.....	309.31	308.50	308.56	314.10	310.15	309.6	.....	.....	.....
12.....	310.49	308.56	308.15	313.70	311.58	309.2	.....	.....	.....
13.....	308.78	308.60	308.67	313.35	311.27	310.0	.....	.....	.....
14.....	308.99	308.44	309.00	313.10	311.55	309.9	.....	.....	.....
15.....	308.72	308.65	309.25	312.40	311.92	309.9	.....	.....	.....
16.....	308.70	308.62	308.90	312.25	311.00	309.8	.....	.....	.....
17.....	308.40	308.70	308.90	312.50	310.80	310.4	.....	.....	.....
18.....	308.78	308.69	309.20	312.80	310.45	310.1	.....	.....	.....
19.....	308.85	308.85	309.16	311.50	310.25	309.6	.....	.....	.....
20.....	308.84	308.74	309.32	312.70	310.85	309.9	.....	.....	.....
21.....	309.20	308.75	309.28	313.00	310.82	309.6	.....	.....	.....
22.....	309.25	309.25	309.28	313.10	310.90	309.7	.....	.....	.....
23.....	309.32	309.00	308.88	312.85	310.70	309.55	.....	.....	.....
24.....	309.00	309.03	308.88	312.78	310.50	309.7	.....	.....	.....
25.....	309.30	308.82	308.76	312.50	310.62	309.6	.....	.....	.....
26.....	309.20	309.09	309.82	311.50	310.40	309.6	.....	.....	.....
27.....	309.05	309.14	310.50	310.95	310.30	310.2	.....	.....	.....
28.....	308.95	309.15	310.45	310.90	310.20	310.4	.....	.....	.....
29.....	308.89	309.05	310.35	310.90	309.48	310.6	.....	.....	.....
30.....	308.58	308.76	310.93	310.58	.....	311.9	.....	.....	.....
31.....	308.42	.....	311.10	310.40	.....	313.35	.....	.....	.....

NOTE.—This station discontinued March 31.

**OSWEGO RIVER AT MINETTO**

At Minetto a new curved dam (No. 5) with fixed concrete ogee crest 500 feet long at Elev. 308.0, radius 192 feet, has been built immediately above the old straight dam, crest Elev. 297.3, which has been removed. The upper pool was raised and water first flowed over new crest October 5, 1914.

**Location.**— In the village of Minetto at new Barge canal dam No. 5, about five miles above the mouth of the Oswego river.

**Records available.**— Water-surface elevations above and below old or new dam, April 18, 1904, to June 30, 1916. Discharge, October 1, 1914, to June 30, 1916.

**Drainage area.**— 5,091 square miles. (United States Geological Survey topographic maps).

**Gages.**— Above dam, direct-reading staff on wing of retaining wall, west bank. Gage is about 400 feet upstream from the dam. Read, October to March, inclusive, once daily — usually in forenoon — to quarter-tenths, and twice daily — at 8 A. M. and 4 P. M. — during April to hundredths, and May and June to tenths.

Below dam, concrete staff just below lower gates, Barge canal lock No. 5. Read, October to March, inclusive, once daily — usually in forenoon — to half-tenths with occasional quarter-tenths, twice daily — at 8 A. M. and 4 P. M. — during April to half-tenths, and May and June to tenths.

**Control.**— Dam crest, Barge canal lock No. 5 and power-plant of the Northern New York Power Company. The latter started testing wheels September 8, 1915.

**Discharge measurements.**— Flow over crest and through power-wheels calculated from hourly readings furnished by the Niagara, Lockport and Ontario Power Company, lessee. Wheels not tested in place. Discharge over dam from curve prepared by this Department. During lower stages the power-plant uses all water available, the pool being drawn down to crest of dam. Water used for canal purposes estimated by this Department.

**Extremes of discharge.**— Current period: Maximum stage recorded, Elev. 313.35, April 5 at 8:00 A. M.; discharge, 30,900 second-feet. Minimum stage recorded, December 16; discharge, 3,930 second-feet.

**Accuracy.**— It is believed that the water passed through the wheels is somewhat underestimated, due to the lack of actual tests of wheels in place, but that the estimated discharge at this station is nearer correct than that obtained at High dam, which is based on only one or two daily readings.

**Regulation.**— By the large number of lakes in the drainage area ; and by pondage at Fulton and Phoenix.

**Coöperation.**— Discharge data furnished as above by the Niagara, Lockport and Ontario Power Company.

Daily elevation of water-surface (B. C. Datum) of OSWEGO RIVER ABOVE DAM AT MINETTO, for the nine months ending June 30, 1916. Charles Smith and William Frank, Observers

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	308.40	308.25	308.40	309.25	309.75	308.60	312.46	310.8	309.8
2.....	308.50	308.35	308.45	308.90	309.90	308.60	312.97	310.4	309.75
3.....	308.60	308.25	308.60	309.80	309.65	308.70	313.28	310.5	309.8
4.....	308.80	308.25	308.52	309.55	309.20	308.00	313.32	310.3	309.5
5.....	308.40	308.25	308.50	310.25	309.30	307.90	313.30	310.0	309.9
6.....	309.20	308.40	308.45	310.60	309.10	308.70	313.26	310.0	309.75
7.....	309.30	308.25	308.25	310.65	309.10	308.60	313.12	309.5	309.95
8.....	309.30	308.20	308.10	310.30	308.50	308.40	313.00	309.45	309.85
9.....	309.10	308.06	308.00	310.20	308.70	308.20	312.76	309.15	309.85
10.....	309.60	308.20	308.20	310.25	309.00	308.60	312.74	309.05	309.75
11.....	308.60	308.25	308.38	310.52	308.90	308.30	312.58	309.2	309.35
12.....	310.10	308.16	307.80	310.25	308.80	307.80	312.42	308.25	309.45
13.....	308.40	308.02	308.20	310.15	308.40	308.20	312.30	308.2	309.4
14.....	308.70	308.10	308.50	310.00	308.60	308.25	312.15	308.0	309.4
15.....	308.30	308.25	308.45	309.70	308.80	308.20	311.98	308.4	309.35
16.....	308.30	308.30	308.10	309.45	308.50	308.10	311.75	308.3	309.45
17.....	308.23	308.20	308.25	308.85	308.40	308.70	311.85	309.35	310.05
18.....	308.40	308.10	308.50	308.40	308.20	308.40	311.51	310.3	309.75
19.....	308.45	308.40	308.25	308.20	307.95	307.90	311.46	310.8	309.8
20.....	308.15	308.20	308.30	308.60	308.60	308.20	311.38	310.4	310.0
21.....	308.30	308.20	308.50	309.10	308.30	308.10	311.40	310.45	309.95
22.....	308.90	308.57	308.70	309.10	308.30	308.00	311.35	310.9	309.95
23.....	308.73	308.38	307.95	309.00	308.10	308.00	312.25	310.9	310.0
24.....	308.70	308.20	307.98	309.10	307.90	308.50	311.52	310.85	309.95
25.....	308.65	308.10	307.90	309.20	308.00	307.90	311.38	310.75	309.9
26.....	308.65	308.40	307.95	309.15	308.10	307.90	311.28	310.7	309.65
27.....	308.50	308.45	309.55	309.25	307.90	308.35	311.20	310.65	309.5
28.....	308.50	308.55	309.45	309.45	308.20	308.92	311.20	310.25	309.5
29.....	308.40	308.50	309.48	310.00	308.20	309.45	311.00	310.2	309.35
30.....	308.20	308.35	309.50	309.40	.....	310.50	310.60	310.1	309.25
31.....	308.25	.....	309.45	309.50	.....	311.50	.....	310.05	.....

Daily elevation of water-surface (B. C. Datum) of OSWEGO RIVER BELOW DAM AT MINETTO, for the nine months ending June 30, 1916. A. T. Brown and William Frank, Observers

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	292.00	292.05	291.40	293.40	292.60	293.00	296.25	294.8	293.85
2.....	292.00	292.45	291.50	293.20	292.70	292.90	296.68	294.4	293.9
3.....	291.50	292.30	291.60	293.70	292.50	293.00	297.00	294.45	293.95
4.....	291.60	292.40	291.33	293.90	292.40	292.50	297.00	294.3	293.65
5.....	292.30	292.30	291.00	294.35	292.60	292.45	296.95	294.25	294.05
6.....	292.70	292.48	291.10	294.50	292.30	293.20	296.91	294.1	293.85
7.....	293.00	292.30	291.00	294.60	293.35	293.10	296.82	293.7	294.05
8.....	293.00	292.30	290.92	294.30	293.00	293.00	296.62	293.75	293.95
9.....	292.90	292.20	290.90	294.20	293.00	292.80	296.42	293.55	293.95
10.....	292.10	292.30	290.95	294.25	293.20	293.10	296.48	293.3	293.85
11.....	292.70	292.30	290.98	294.40	293.30	292.80	296.25	293.35	293.55
12.....	292.30	292.32	290.70	294.25	293.25	292.40	296.20	292.85	293.6
13.....	291.90	292.28	290.80	294.10	292.90	292.90	296.02	292.7	293.6
14.....	292.40	292.15	290.92	293.90	293.20	292.90	295.95	291.95	293.6
15.....	292.40	292.20	290.88	293.40	293.40	292.80	295.79	292.7	293.55
16.....	292.40	292.30	287.80	292.95	293.10	292.70	295.60	292.55	293.65
17.....	292.45	292.15	288.80	293.00	293.30	293.30	295.70	293.3	294.05
18.....	292.40	292.50	290.60	292.40	292.70	293.10	295.15	294.35	293.95
19.....	292.45	292.40	291.19	292.20	292.40	292.60	295.35	294.6	293.95
20.....	292.90	292.80	291.20	292.90	292.95	292.90	295.28	294.4	294.15
21.....	292.70	292.70	291.60	293.30	293.30	292.80	295.28	294.45	294.1
22.....	292.50	292.95	291.75	293.40	293.30	292.90	295.05	294.8	294.05
23.....	292.70	292.80	291.40	292.45	293.20	292.60	294.80	294.0	294.05
24.....	292.80	292.40	291.00	292.45	293.00	292.80	295.40	294.85	294.05
25.....	292.75	291.74	291.20	292.70	293.00	293.00	295.32	294.75	294.05
26.....	292.80	291.83	291.20	292.60	292.80	292.80	295.28	294.7	293.85
27.....	292.70	291.88	293.70	292.35	292.90	292.95	295.20	294.65	293.75
28.....	292.60	291.45	293.60	292.50	293.00	293.45	295.18	294.3	293.75
29.....	292.60	291.40	293.70	292.50	292.70	294.00	294.95	294.25	293.6
30.....	292.00	291.37	293.75	292.50	.....	294.50	294.62	294.2	293.55
31.....	292.05	.....	293.60	292.50	.....	295.20	.....	294.15	.....

Daily discharge, in second-feet, of OSWEGO RIVER AT MINETTO, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	*	5,350	5,840	7,470	10,140	6,170	24,640	14,680	10,580
2.....	*	5,090	5,770	8,010	10,450	6,440	25,280	13,620	10,800
3.....	*	4,780	5,650	11,060	9,930	6,490	28,330	13,210	10,950
4.....	*	4,430	5,290	12,260	9,280	6,040	29,160	13,530	10,710
5.....	*	5,320	5,520	13,030	9,000	5,490	29,250	12,980	11,290
6.....	*	5,050	5,090	13,510	8,920	6,320	29,280	11,640	10,460
7.....	*	4,850	5,560	14,240	7,990	6,410	28,450	10,330	11,070
8.....	*	5,080	5,510	13,850	6,510	6,260	28,980	9,790	11,130
9.....	*	4,890	5,030	12,600	6,900	6,190	26,463	9,050	10,830
10.....	*	4,880	4,820	12,800	7,540	6,310	26,090	8,110	10,180

Daily discharge, in second-feet, of OSWEGO RIVER AT MINETTO, for the nine months ending June 30, 1916—Continued

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
11.....	*	4,970	5,080	13,370	7,290	6,010	25,430	8,820	9,220
12.....	*	4,870	4,560	12,190	7,540	5,400	24,540	6,740	9,990
13.....	*	4,650	4,810	11,900	7,080	6,510	22,700	5,770	9,590
14.....	*	4,590	5,120	11,360	7,040	6,680	22,200	4,290	9,430
15.....	*	4,960	4,480	9,430	7,330	6,620	23,130	5,980	9,140
16.....	*	4,940	3,930	8,850	7,200	6,440	20,860	4,920	9,670
17.....	*	5,430	4,450	7,430	6,760	7,110	20,420	8,770	10,700
18.....	*	5,390	5,610	6,180	6,680	6,570	18,980	11,970	10,470
19.....	*	5,200	6,590	6,430	6,000	6,130	17,920	13,670	10,670
20.....	*	5,630	7,080	7,320	5,990	7,110	17,920	13,630	10,730
21.....	*	6,090	7,570	8,310	6,430	6,700	17,500	13,600	11,360
22.....	*	6,520	6,890	8,490	6,680	6,750	17,240	14,560	11,480
23.....	*	6,560	6,820	8,810	6,300	6,670	17,120	15,490	11,270
24.....	*	6,530	6,760	8,790	6,030	6,270	18,770	15,640	11,460
25.....	*	6,560	6,900	9,120	5,870	6,100	18,160	15,740	10,990
26.....	*	6,590	7,180	8,740	5,900	5,980	17,770	15,300	10,700
27.....	*	6,840	10,210	8,910	5,970	7,490	16,450	14,600	9,900
28.....	*	5,810	10,510	9,510	5,990	8,270	16,670	13,200	9,470
29.....	*	5,830	7,960	10,140	5,640	10,490	15,720	12,740	9,130
30.....	*	5,820	8,250	10,300	.....	14,470	14,860	12,190	8,780
31.....	*	.....	8,190	10,030	.....	18,790	.....	12,030	.....
Mean.....	*	5,448	6,246	10,143	7,253	7,250	21,970	11,503	10,404

\* Discharge through wheels of Northern New York Power Company during October not available.

Monthly discharge of OSWEGO RIVER AT MINETTO, for the nine months ending June 30, 1916

[Drainage area, 5,091 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF Depth in inches on drainage area
	Maximum	Minimum	Mean	Per square mile	
October *	.....	.....	.....	.....	.....
November.....	6,840	4,430	5,448	1.070	1.194
December.....	10,510	3,930	6,246	1.227	1.415
January.....	14,240	6,180	10,143	1.992	2.296
February.....	10,450	5,640	7,253	1.425	1.536
March.....	18,790	5,400	7,250	1.424	1.642
April.....	29,280	14,860	21,976	4.317	4.817
May.....	15,740	4,290	11,503	2.259	2.605
June.....	11,480	8,780	10,404	2.044	2.280

\* Discharge through wheels of Northern New York Power Company during October not available.

**OSWEGO RIVER AT NEW HIGH DAM, OSWEGO**

High dam (old) with fixed crest at about Elev. 281.8 has been removed above Elev. 268.0, having been submerged by the pool formed by new High dam (dam No. 6) located about a mile further downstream with fixed concrete ogee crest 500 feet long at Elev. 290.0. The new pool was filled January 7, 1915.

**Location.**—At Barge canal dam No. 6, known as new High dam, just south of the city of Oswego and about two miles above the mouth of the Oswego river.

**Records available.**—Water-surface elevation above and below, January 1, 1915, to June 30, 1916. Discharge, January 7, 1915, to June 30, 1916.

**Drainage area.**—5,097 square miles. (United States Geological Survey topographic maps.)

**Gages.**—Above dam, direct-reading staff on wing of upper approach wall to Barge canal lock No. 6, read twice daily — at 10 A. M. and 2 P. M. — until December 10, then once daily to March 31, and during April to June, inclusive, twice daily — at 8 A. M. and 4 P. M. This gage is about 350 feet upstream from the crest.

Below dam, direct-reading staff, on wing of lower approach wall, Barge canal lock No. 6. Read once daily, October to March, inclusive, and twice daily — at 8 A. M. and 4 P. M. — April to June, inclusive.

All gage readings to half-tenths with occasional quarter-tenths.

**Control.**—Crest, Barge canal lock No. 6 and bulkhead gates.

**Discharge measurements.**—Ordinarily the entire flow of the river, except the small amount required for canal purposes, passes over the dam. During certain periods the gates in the bulkhead at the west end of the dam were operated by persons connected with the power-plant of the Northern New York Power Company at dam No. 5, Minetto, to reduce the tail-water elevation at that plant. A complete and accurate record of this gate operation is not available. Where possible the flow through the bulkhead has been estimated, and when the indications are that the gates must have been open but records are lacking, discharge estimates are omitted. Water used for canal purposes is included.



**Extremes of discharge.**—Current period: Maximum stage recorded, Elev. 293.30 on April 3, 4 and 5; discharge, 31,400 second-feet. Minimum stage recorded, Elev. 287.20, December 16 at 10 A. M.

**Accuracy.**—The operation of the bulkhead gates as noted above has reduced the accuracy of the record that would otherwise be obtained from the flow over the crest alone. The one or two daily readings are not a sufficient basis for accurate discharge estimates, owing to the fluctuation of flow caused by pondage and industrial wheels at Fulton and Phoenix. It is believed that the estimated discharge at this station is too high and that those obtained at Minetto, while possibly a little low, are nearer correct.

**Regulation.**—By the large number of lakes in the drainage area and by pondage at Fulton and Phoenix.

Daily elevation of water-surface (B. C. Datum) of OSWEGO RIVER ABOVE NEW HIGH DAM, OSWEGO, for the nine months ending June 30, 1916. Thomas Redmond and James R. Kelly, Observers

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	291.64	292.61	291.21	291.50	292.3	292.80	295.60	294.42	293.75
2.....	292.25	292.55	290.99	292.30	292.25	292.45	296.05	294.22	293.80
3.....	292.08	292.32	291.05	293.75	292.22	292.30	296.30	294.20	293.78
4.....	292.35	292.45	290.70	292.70	292.00	291.80	296.30	294.15	293.55
5.....	292.46	292.43	290.70	293.90	292.20	291.70	296.30	293.98	293.78
6.....	292.73	292.55	290.92	294.30	291.85	292.40	296.28	293.90	293.68
7.....	292.84	292.22	290.79	294.40	293.20	292.30	296.18	293.50	293.85
8.....	292.84	292.43	290.75	294.20	292.80	292.10	296.06	293.55	293.70
9.....	292.80	292.37	290.38	293.75	292.90	291.85	295.85	293.38	293.70
10.....	293.33	292.35	290.40	294.20	293.00	292.20	295.90	293.22	293.68
11.....	292.65	292.39	290.60	294.22	293.05	292.30	295.75	293.12	293.38
12.....	292.50	292.40	289.30	293.90	293.10	291.80	295.58	292.85	293.45
13.....	292.39	292.38	289.55	293.50	292.80	292.20	295.52	292.68	293.50
14.....	292.50	292.20	289.57	293.50	293.10	292.15	295.42	291.88	293.50
15.....	292.37	292.33	290.30	292.60	293.20	292.05	295.32	292.85	293.45
16.....	292.48	292.38	287.20	292.20	292.90	291.90	295.15	291.58	293.55
17.....	292.10	292.50	288.20	292.00	292.75	292.50	295.18	292.25	293.90
18.....	292.34	292.55	290.20	291.40	292.55	292.30	294.98	294.15	293.72
19.....	292.50	292.73	290.60	291.20	292.32	291.80	294.90	294.15	293.75
20.....	292.52	292.75	291.30	292.00	292.83	292.10	294.85	294.30	293.85
21.....	292.72	292.55	291.10	292.30	292.80	292.20	294.85	294.18	293.82
22.....	292.57	292.63	290.70	292.00	292.78	292.10	294.68	294.45	293.58
23.....	292.55	292.40	291.00	291.90	292.58	292.00	294.58	294.58	293.88
24.....	292.48	292.06	291.00	292.05	292.50	291.90	294.92	294.50	293.80
25.....	292.71	291.97	291.10	292.20	292.60	291.85	294.90	294.48	293.80
26.....	292.70	291.78	291.20	292.10	292.65	291.70	294.80	294.40	293.72
27.....	292.65	291.80	293.55	291.95	292.45	292.20	294.80	294.30	293.58
28.....	292.56	290.90	293.60	292.25	292.60	292.85	294.72	294.02	293.55
29.....	292.25	291.94	293.50	292.20	292.50	293.50	294.55	294.05	293.45
30.....	292.06	291.53	293.30	292.25	.....	294.50	294.35	293.92	293.38
31.....	292.12	.....	291.90	292.15	.....	295.10	.....	293.92	.....

Daily elevation of water-surface (B. C. Datum) of OSWEGO RIVER BELOW NEW HIGH DAM, OSWEGO, for the nine months ending June 30, 1916. Thomas Redmond and James R. Kelly, Observers

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	
1.....	269.20	270.45	270.70	270.60	271.40	270.80	274.10	272.60	271.72
2.....	270.00	270.35	270.55	271.10	271.35	270.40	274.65	272.30	271.82
3.....	270.10	270.30	270.50	272.00	271.30	270.30	274.75	272.30	271.78
4.....	270.15	270.15	270.30	271.90	271.20	269.80	274.70	272.25	271.78
5.....	270.45	270.32	270.70	272.10	271.40	269.70	274.70	272.00	271.78
6.....	270.66	270.35	270.35	272.30	271.10	270.33	274.68	271.95	271.62
7.....	270.80	270.35	270.40	272.50	271.10	270.33	274.62	271.80	271.85
8.....	270.80	270.25	270.35	272.20	270.50	270.20	274.25	271.52	271.65
9.....	270.60	270.25	270.25	272.00	270.60	270.00	274.40	271.35	271.70
10.....	270.45	270.18	270.15	272.20	270.70	270.30	274.32	271.15	271.62
11.....	270.40	270.30	270.20	272.30	270.75	270.30	274.18	271.10	271.52
12.....	270.40	270.32	270.30	272.00	270.85	269.90	274.00	270.70	271.45
13.....	270.10	270.10	270.90	271.60	270.40	270.60	273.88	270.72	271.40
14.....	270.25	270.28	270.98	271.65	270.70	270.50	273.75	270.00	271.45
15.....	270.20	270.20	270.30	271.40	270.90	270.40	273.72	270.68	271.42
16.....	270.10	270.20	269.90	271.00	270.60	270.30	273.68	269.95	271.48
17.....	270.22	270.25	270.00	270.90	270.50	271.50	273.48	271.20	271.92
18.....	270.25	270.32	270.10	270.25	270.25	271.30	273.25	272.10	271.98
19.....	270.30	270.45	270.80	270.60	270.05	270.80	273.15	272.45	271.98
20.....	270.20	270.60	*270.20	270.60	270.55	271.20	273.12	272.38	271.82
21.....	270.50	270.80	270.70	271.20	270.50	271.30	273.12	272.50	271.82
22.....	270.35	270.70	270.45	271.30	270.50	270.90	273.00	272.65	271.80
23.....	270.30	270.60	270.65	271.20	270.30	270.95	273.05	272.78	271.80
24.....	270.75	270.60	270.80	271.10	270.30	270.85	273.25	272.60	271.82
25.....	270.48	271.00	271.00	271.25	270.40	270.80	273.15	272.58	271.98
26.....	270.50	270.60	271.20	271.20	270.50	270.70	273.10	272.52	271.72
27.....	270.40	270.70	271.50	271.10	270.32	271.20	273.02	272.32	271.52
28.....	270.35	270.70	271.55	271.40	270.50	271.80	272.95	272.38	271.48
29.....	270.35	270.70	271.55	271.35	270.40	272.40	272.75	272.08	271.32
30.....	269.85	270.90	271.48	271.60	.....	272.80	272.75	272.15	271.22
31.....	270.30	.....	270.90	271.50	.....	273.40	.....	271.92	.....

\*Record doubtful; adjacent gages would indicate that 271.2 was intended.

Daily discharge, in second-feet, of OSWEGO RIVER AT NEW HIGH DAM, OSWEGO, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	3,860	8,090	*	3,340	13,880	9,040	26,270	18,370	14,900
2.....	6,390	7,900	*	6,620	13,560	7,320	29,530	17,120	14,580
3.....	5,640	6,710	*	14,250	18,450	6,620	31,390	17,000	14,470
4.....	6,850	7,320	*	8,540	12,420	4,450	31,390	16,690	13,120
5.....	7,370	7,250	*	15,170	13,360	4,090	31,390	15,650	14,470
6.....	8,690	7,820	*	17,620	11,760	7,090	31,240	15,170	13,890
7.....	9,250	6,360	*	18,250	11,160	6,620	30,490	12,980	14,680
8.....	9,250	7,250	*	17,000	9,040	5,790	29,740	13,120	14,000
9.....	9,040	6,970	*	14,280	9,560	4,650	28,060	12,150	13,500
10.....	6,760	6,880	*	17,000	10,080	6,170	28,420	11,270	13,880
11.....	8,290	7,060	*	17,120	10,350	6,620	27,340	10,720	12,17
12.....	7,560	7,110	*	15,170	10,610	4,480	26,130	9,300	12,57
13.....	7,040	7,020	*	12,830	9,040	6,170	25,700	8,440	12,85
14.....	7,560	6,190	*	16,910	10,610	5,950	25,000	4,800	12,84
15.....	6,950	6,780	*	11,990	11,160	5,510	24,410	9,300	12,56

## REPORT OF STATE ENGINEER

Daily discharge, in second-feet, of OSWEGO RIVER AT NEW HIGH DAM, OSWEGO,  
for the nine months ending June 30, 1916 — *Continued*

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
16.....	7,470	7,020	*	10,050	9,560	4,880	23,150	3,650	13,120
17.....	5,730	7,580	*	9,160	8,790	7,560	23,340	6,390	15,170
18.....	6,810	7,800	*	6,740	7,800	6,620	22,000	16,710	14,110
19.....	7,560	8,710	*	6,060	6,710	4,480	21,470	16,700	14,290
20.....	7,660	8,810	*	9,160	9,240	5,730	21,140	17,630	14,880
21.....	8,640	7,820	*	13,440	9,040	6,170	21,140	16,880	14,710
22.....	7,900	8,220	*	12,030	8,980	5,730	20,040	18,570	15,060
23.....	7,800	7,100	*	11,580	7,950	5,300	19,384	19,400	15,070
24.....	7,500	*	*	12,250	7,560	4,880	21,610	18,890	14,580
25.....	8,620	*	*	12,960	8,050	4,680	21,470	18,760	14,580
26.....	8,560	*	*	12,490	8,290	4,090	20,800	18,260	14,110
27.....	8,310	*	*	11,810	7,320	6,170	20,800	17,620	13,300
28.....	7,880	*	*	13,590	8,050	9,300	20,290	15,900	13,130
29.....	6,410	*	*	13,350	7,560	12,880	19,200	16,090	12,560
30.....	5,530	*	*	13,590	.....	18,880	17,930	15,300	12,170
31.....	5,820	*	*	13,110	.....	22,810	.....	15,310	.....
Mean.....	7,377	*	*	12,499	9,825	7,119	24,675	14,322	13,831

\* Record of opening of bulkhead gates during latter part of November and December not available; discharge not estimated.

Monthly discharge of OSWEGO RIVER AT NEW HIGH DAM, OSWEGO, for the nine months  
ending June 30, 1916

[Drainage area, 5,097 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN OFF
	Maximum	Minimum	Mean	Per square mile	Depth in inches on drainage area
October.....	9,250	3,860	7,377	1.447	1.67
November *.....	.....	.....	.....	.....	.....
December *.....	.....	.....	.....	.....	.....
January.....	18,250	3,340	12,499	2.452	2.83
February.....	13,830	6,710	9,825	1.928	2.08
March.....	22,810	4,090	7,119	1.397	1.61
April.....	31,390	17,930	24,675	4.841	5.40
May.....	19,400	3,650	14,322	2.810	3.24
June.....	15,170	12,170	13,831	2.714	3.03

\* Record of opening of bulkhead gates during latter part of November and December not available; discharge not estimated.

## OSWEGO RIVER ABOVE CURVED DAM, OSWEGO

The record heretofore published as "Oswego river above Curved Dam" is that obtained at gage No. 2 on the west side of the river. This gage was established April 7, 1904, and is a staff located on the north face of the third crib pier south of, and part of, the upper approach to the Varick canal lock at the west end of the Curved dam at Oswego. The gage is read once daily to obtain surface elevations only. It indicates the water-surface about 100 feet above the dam.

This gage should not be confused with the gage at the east end of the dam whose record is published as "Oswego River East Side above Curved Dam, Oswego."

Daily elevation of water-surface (B. C. Datum) of OSWEGO RIVER ABOVE CURVED DAM, OSWEGO, for the nine months ending June 30, 1916. D. D. Tompkins, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	269.7	270.0	270.6	271.2	271.6	270.4	273.9	272.5	271.6
2.....	270.0	270.2	270.5	271.3	271.6	270.4	274.3	272.1	271.4
3.....	270.2	269.9	270.3	271.5	271.5	270.3	274.3	272.1	271.5
4.....	270.1	269.9	270.2	272.0	271.3	270.4	274.4	272.1	271.7
5.....	270.2	270.0	270.8	272.0	271.2	270.6	274.3	271.9	271.7
6.....	270.5	270.5	270.4	272.1	271.5	270.2	274.3	271.8	271.5
7.....	270.8	270.4	270.3	272.4	271.1	270.2	274.3	271.8	271.6
8.....	270.7	269.9	270.3	272.2	270.7	270.2	274.2	271.5	271.5
9.....	270.7	270.1	270.2	272.2	270.4	270.1	274.2	271.2	271.6
10.....	270.5	270.1	269.9	272.1	270.7	270.1	274.1	270.9	271.4
11.....	270.4	270.2	270.0	272.1	270.7	270.3	273.9	271.1	271.5
12.....	270.1	270.1	270.4	271.9	270.8	270.2	273.7	270.8	271.3
13.....	269.7	270.0	269.7	271.7	271.0	270.3	273.7	270.6	271.2
14.....	270.1	269.9	270.0	271.8	270.8	270.4	273.6	270.2	271.2
15.....	270.1	269.9	270.1	271.5	270.7	270.3	273.5	270.5	271.2
16.....	270.0	270.1	269.8	271.6	270.5	270.3	273.5	270.0	271.1
17.....	270.5	270.2	269.8	271.1	270.3	270.4	273.3	271.0	271.7
18.....	270.1	270.2	269.8	270.9	270.3	270.6	273.2	272.0	271.7
19.....	270.2	270.2	270.8	270.4	270.4	270.5	273.1	272.4	271.6
20.....	270.4	270.5	270.7	270.4	270.4	270.5	273.1	272.2	271.6
21.....	270.5	270.8	270.7	270.9	270.7	270.4	273.1	272.5	271.6
22.....	270.5	270.9	270.4	271.0	270.6	270.3	272.9	272.6	271.7
23.....	270.5	270.6	270.7	271.4	270.4	270.3	273.1	272.7	271.6
24.....	270.9	270.6	270.7	271.0	270.3	270.4	273.1	272.5	271.6
25.....	270.4	270.9	271.0	271.2	270.5	270.3	273.1	272.3	271.8
26.....	270.5	270.8	271.3	271.2	270.3	270.5	273.1	272.3	271.4
27.....	270.4	270.7	271.4	271.2	270.7	270.6	273.1	272.1	271.5
28.....	270.5	270.9	271.4	271.4	270.1	270.8	273.0	272.1	271.5
29.....	270.5	270.3	271.3	271.5	270.1	271.4	272.6	271.9	271.2
30.....	270.2	270.7	271.0	271.8	.....	272.1	272.6	272.1	271.2
31.....	270.5	.....	270.6	271.5	.....	273.0	.....	271.9	.....

## OSWEGO RIVER EAST SIDE ABOVE CURVED DAM, OSWEGO

This gage was established December, 1907, as gage L of the Oswego specials. The gage is a reference point, Elev. 275.56, located at the east end of the curved dam on the upstream face of the abutment about twenty-five feet from the end of the crest. Readings were made once daily previous to April 1, 1916, since that date, twice daily — at 8:00 A. M. and 4:00 P. M.

Distance from reference point to water-surface taken from October to January, inclusive, in general to tenths, and from February to June, inclusive, to half-tenths.

This gage should not be confused with the gage on the west side of the river the record of which is published as "Oswego River above Curved Dam."

Daily elevation of water-surface (B. C. Datum) of OSWEGO RIVER, EAST SIDE ABOVE CURVED DAM, OSWEGO, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	269.25	270.35	270.65	270.55	270.95	270.38	274.05	272.67	271.77
2.....	269.85	270.25	270.45	*270.35	271.05	270.05	274.55	272.45	271.75
3.....	269.95	270.15	270.45	271.85	270.95	269.95	*275.10	272.55	271.75
4.....	270.05	270.05	270.25	271.80	270.75	269.45	*274.87	272.35	271.73
5.....	270.25	270.25	270.65	271.95	270.85	269.40	*275.07	272.10	271.70
6.....	270.55	270.25	270.25	272.20	270.55	270.05	*275.10	272.00	271.67
7.....	270.65	270.25	270.35	272.40	270.65	269.95	*275.10	271.85	271.70
8.....	270.65	270.15	270.25	272.05	270.15	269.80	274.50	271.55	271.65
9.....	270.45	270.15	270.15	271.85	270.20	269.95	274.45	271.35	271.65
10.....	270.35	270.05	270.05	272.05	270.35	270.25	274.30	271.15	271.67
11.....	270.25	270.25	270.15	272.05	270.35	270.15	274.25	271.05	271.70
12.....	270.35	270.25	270.25	271.88	270.45	269.75	274.20	270.70	271.45
13.....	270.05	270.05	270.65	271.55	270.10	270.45	*274.05	270.97	271.55
14.....	270.15	270.15	270.65	271.35	270.40	270.30	*273.95	270.20	271.45
15.....	270.15	270.05	*271.15	271.15	270.50	270.20	273.77	270.70	271.30
16.....	270.05	270.15	269.75	270.75	270.25	270.05	273.75	270.25	271.50
17.....	270.15	270.15	*270.25	270.65	270.10	270.55	273.65	271.15	271.85
18.....	270.15	270.25	*270.55	270.45	269.95	270.35	273.30	271.80	271.90
19.....	270.25	270.35	270.75	270.45	269.75	*269.85	273.20	271.50	271.65
20.....	270.15	270.55	270.95	270.55	270.15	*270.15	273.10	272.50	271.70
21.....	270.45	270.75	270.67	271.15	270.15	*269.95	273.05	272.65	271.85
22.....	270.25	270.75	*271.00	271.25	270.13	*269.65	272.93	272.70	271.85
23.....	270.25	270.65	270.85	271.17	270.05	*269.60	273.15	272.85	271.70
24.....	270.65	270.55	270.75	270.75	270.00	*269.80	*273.55	272.80	271.75
25.....	270.35	270.95	270.73	270.80	270.10	*269.70	*273.35	272.60	271.90
26.....	270.45	270.55	270.70	270.75	270.15	*269.58	273.00	722.55	271.50
27.....	270.35	270.65	271.25	270.65	269.95	*269.98	273.05	272.50	271.45
28.....	270.25	270.65	271.30	271.15	270.10	*270.60	273.00	272.40	271.45
29.....	270.25	270.65	271.35	271.10	269.98	*270.75	272.85	272.12	271.35
30.....	269.75	270.85	271.80	*270.90	.....	*271.05	272.75	272.22	271.20
31.....	270.25	.....	270.85	271.05	.....	*270.55	.....	272.00	.....

\*Record doubtful, based on comparison with gages above curved dam and below new High dam.

## LAKE ONTARIO AT MOUTH OF OSWEGO RIVER

This gaging station is located in the mouth of the Oswego river in the harbor at Oswego and indicates very closely the lake level, except during times of large flow in the Oswego river, when there will be some slight slope below the gage. It was established December, 1907, and is located on the east side of the river below Bridge street bridge, the bridge nearest the lake. The lower gage in new lock No. 8 is now used. This gage was read once daily previous to April 1, 1916, since that date, twice daily — at 8:00 A. M. and 4:00 P. M.

Daily elevation of water-surface (B. C. Datum) of LAKE ONTARIO AT MOUTH OF OSWEGO RIVER, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	246.3	246.4	246.0	245.75	246.60	246.20	247.55	248.05	248.68
2.....	246.4	246.6	246.0	245.65	246.70	246.20	247.85	247.95	248.65
3.....	246.3	246.3	245.9	246.4	246.65	246.10	248.25	248.00	248.95
4.....	246.2	246.9	246.0	246.0	246.58	246.12	248.12	248.15	248.85
5.....	246.3	246.3	245.9	246.1	246.62	246.25	248.15	248.15	248.88
6.....	246.5	246.2	246.0	246.4	246.50	246.35	248.15	248.15	248.90
7.....	246.4	246.1	245.9	246.4	246.50	246.20	247.90	248.20	248.88
8.....	246.5	246.0	245.9	246.2	246.30	246.30	247.80	248.02	248.95
9.....	246.6	246.3	246.2	246.3	246.30	246.50	248.65	248.20	248.90
10.....	246.6	246.1	246.1	246.1	246.25	246.70	248.05	248.30	248.95
11.....	246.4	245.8	245.9	246.3	246.28	246.40	248.50	248.15	248.95
12.....	246.5	246.0	246.0	245.8	246.40	246.45	248.45	248.08	249.05
13.....	246.4	246.2	245.7	246.5	246.25	246.40	247.88	248.05	248.98
14.....	246.5	245.8	246.0	246.4	246.50	246.50	247.78	247.95	249.02
15.....	246.4	246.2	246.0	246.1	246.65	246.55	247.75	248.05	248.95
16.....	246.4	246.1	245.7	246.0	246.40	246.43	248.00	248.10	249.00
17.....	246.3	246.1	245.5	246.6	246.46	246.63	247.90	248.28	249.08
18.....	246.2	245.9	245.7	246.5	246.40	246.75	248.05	248.52	249.12
19.....	246.4	245.9	245.8	246.0	246.42	246.85	248.00	248.52	249.22
20.....	246.4	246.4	245.9	245.6	246.50	246.85	248.05	248.54	249.25
21.....	246.4	246.1	245.75	246.3	246.50	246.70	248.00	248.58	249.22
22.....	246.5	246.2	245.7	246.5	246.52	246.20	248.00	248.55	249.28
23.....	246.5	246.0	245.5	246.55	246.50	246.30	248.05	248.70	249.25
24.....	246.3	246.0	245.8	246.2	246.35	246.10	248.25	248.75	249.25
25.....	246.3	245.9	245.5	246.3	246.52	246.20	248.30	248.80	249.30
26.....	246.3	245.9	245.8	246.1	246.60	246.22	248.10	248.82	249.30
27.....	246.4	246.1	245.9	246.3	246.42	246.62	248.20	248.62	249.28
28.....	246.1	245.9	246.0	246.6	246.60	248.80	248.25	248.65	249.38
29.....	246.3	246.0	245.7	246.65	246.80	247.00	248.20	248.62	249.30
30.....	246.5	246.3	246.0	246.3	.....	247.20	248.00	248.70	249.22
31.....	246.1	.....	245.9	246.35	.....	247.20	.....	248.82	.....

## SENECA RIVER BASIN

### DESCRIPTION

Seneca river receives the drainage from the central group of lakes lying southward from Lake Ontario, known as the finger lakes. The drainage basin is rolling, though not precipitous, excepting for the deep narrow valleys crossing it, in which the lakes are situated, and certain additional valleys not at the present time occupied by lakes. All of the lakes properly belonging to the finger lake system do not drain into the Seneca river. Oneida lake on the east is tributary to Oneida river, while on the west of the Seneca river there is a series of lakes, including Honeoye, Canadice, Hemlock and Conesus lakes, smaller than, but parallel with and otherwise similar to the main finger lakes, which are tributary to Genesee river. The upper lakes of the system in the Seneca river basin are Onondaga, Otisco, Skaneateles, Owasco, Cayuga, Seneca, Keuka and Canandaigua lakes.

For table of drainage areas see page 62.

## SENECA RIVER

### DESCRIPTION

The stream designated as Seneca river originates at the outlet of Seneca lake, flows easterly into the foot of Cayuga lake and then northerly through the extensive Montezuma marshes to a point near Savannah, where it leaves the broad marsh area and turns easterly, passing to the north of Syracuse and receiving Onondaga outlet, then turning northerly and joining Oneida river at Three River Point to form the Oswego river. This river has been canalized for the Barge canal throughout its entire length. The construction of five dams and the necessary dredging has resulted in a series of navigable pools having low navigable water-surfaces referred to Barge canal datum as follows:

Above Three River Point due to the dam at Phoenix on the Oswego river, Elev. 363.0; above Baldwinsville, Elev. 374.0; above foot of Cayuga lake, Elev. 381.5; above Seneca Falls, Elev. 430.5; above Waterloo, Elev. 445.0.

The most important tributaries of Seneca river are the outlets of Onondaga, Otisco, Skaneateles and Owasco lakes, and Clyde river, which enters the Seneca river near Clyde and which in turn

is formed by the junction of Ganargua creek, often called Mud creek, and Canandaigua outlet at Lyons.

The following tables show the mean daily elevation of water-surface at different gages maintained on Seneca river during the nine months ending June 30, 1916, exclusive of those on Seneca and Cayuga lakes which are given separately.

#### SENECA RIVER ABOVE DAM, WATERLOO

This station is located above the new dam in the village of Waterloo. The new dam or regulating works consisting of six Taintor gates each having a clear span of 36 feet, three with sills at Elev. 439.0 and three at Elev. 435.0, is located immediately below and replaces the old fixed dam. The three larger openings can only pass water to the power-plant of the Tracy Development Company. The low navigable surface above this dam is Elev. 245.0.

The gage is read once daily.

Daily elevation of water-surface (B. C. Datum) of SENECA RIVER ABOVE DAM AT WATERLOO, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	445.7	445.3	444.9	.....	445.4	444.7	446.4	.....	446.6
2.....	445.8	.....	445.1	.....	445.3	444.9	.....	.....	446.5
3.....	.....	445.0	.....	444.6	445.4	444.5	446.3	.....	.....
4.....	445.9	445.35	*445.0	444.2	445.3	445.0	445.6	.....	.....
5.....	445.65	445.1	.....	444.2	445.4	.....	446.4	.....	446.6
6.....	445.7	445.3	444.9	444.6	.....	445.0	446.5	.....	446.5
7.....	445.95	.....	444.9	444.6	445.3	444.1	446.3	.....	446.6
8.....	445.8	445.4	444.8	444.6	445.2	444.1	446.2	446.7	446.5
9.....	445.6	445.25	444.7	.....	445.2	444.0	.....	445.5	446.6
10.....	.....	445.1	444.9	444.9	445.4	444.0	.....	445.6	446.7
11.....	446.0	444.8	444.8	444.6	445.3	444.3	.....	445.5	.....
12.....	446.1	445.05	.....	444.4	.....	.....	.....	446.1	446.8
13.....	446.0	445.3	444.7	444.5	.....	445.3	.....	446.0	446.4
14.....	445.9	.....	444.8	444.7	445.3	445.2	.....	.....	446.5
15.....	446.0	444.9	444.8	444.6	444.9	445.1	.....	446.1	446.7
16.....	445.95	445.1	444.6	.....	444.9	446.0	.....	446.4	446.8
17.....	.....	.....	444.4	445.2	444.5	445.9	.....	446.3	446.9
18.....	445.9	444.9	444.4	445.5	444.7	445.5	.....	446.6	.....
19.....	446.0	444.9	.....	445.6	445.0	.....	.....	446.9	446.8
20.....	446.15	444.61	444.4	445.3	.....	446.4	.....	446.5	446.9
21.....	.....	.....	444.3	445.4	444.6	446.3	.....	.....	446.8
22.....	445.9	445.1	444.3	445.3	.....	446.4	.....	447.0	446.5
23.....	445.3	444.9	444.3	.....	444.8	446.5	.....	447.4	446.6
24.....	.....	444.6	441.3	445.4	444.8	446.3	.....	447.1	446.7
25.....	445.4	.....	.....	445.3	444.5	446.5	.....	446.8	.....
26.....	445.2	445.1	.....	445.3	444.3	.....	.....	446.6	446.5
27.....	445.8	443.6	444.2	445.4	.....	446.3	.....	446.7	446.9
28.....	445.75	.....	444.3	445.5	444.5	446.0	.....	.....	446.8
29.....	445.4	444.65	444.7	445.3	444.5	446.2	.....	446.5	446.3
30.....	445.05	.....	444.5	.....	.....	446.0	.....	446.4	447.0
31.....	445.3	.....	444.5	445.4	.....	446.3	.....	446.6	.....

\* Record doubtful. Beginning March 13, record taken at upper gage, lock 4. Previous to that date immediately above larger Taintor gates.



**SENECA RIVER ABOVE GUARD-GATE, OLD CANAL, AT WATERLOO**

This station is located on the upper side of the new guard or controlling gate in the old canal at Waterloo. This gage is about 1,000 feet down the canal from its junction with the river above the Waterloo dam and about 2,700 feet above old canal lock No. 1 at which a gage was previously maintained. Water-surface here indicated is that in the Seneca river above the dam, lowered by whatever slope is due to the flow through the 1,000 feet of canal above the gage. Gage read once daily.

Discontinued January 29, 1916.

Daily elevation of water-surface (B. C. Datum) of **SENECA RIVER ABOVE GUARD-GATE, OLD CANAL, AT WATERLOO**, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	DAY	Oct.	Nov.	Dec.	Jan.
1.....	445.8	445.4	445.1	.....	16.....	446.0	445.3	444.7	.....
2.....	445.9	.....	445.25	.....	17.....	.....	.....	444.5	445.6
3.....	.....	445.2	.....	444.8	18.....	446.0	445.1	444.7	445.6
4.....	446.0	445.45	444.8	444.8	19.....	446.1	445.1	.....	445.7
5.....	445.8	445.3	.....	444.6	20.....	446.2	445.4	.....	445.5
6.....	445.85	445.45	445.1	444.9	21.....	.....	.....	444.9	445.4
7.....	446.0	.....	445.05	444.8	22.....	446.0	445.3	444.5	445.5
8.....	445.95	445.55	445.0	444.6	23.....	445.4	445.0	444.4	.....
9.....	445.5	445.35	444.9	.....	24.....	.....	444.8	444.4	445.5
10.....	.....	445.2	445.0	444.9	25.....	445.5	.....	.....	445.4
11.....	446.1	445.05	444.95	444.9	26.....	445.4	445.15	.....	445.4
12.....	446.15	445.25	.....	445.0	27.....	445.85	443.9	444.6	445.5
13.....	446.5	445.4	444.9	445.0	28.....	445.85	.....	444.8	445.4
14.....	446.0	.....	445.0	444.9	29.....	445.5	444.85	444.9	445.5
15.....	446.05	445.15	445.0	445.0	30.....	445.15	.....	444.9	.....
					31.....	445.4	.....	444.6	.....

NOTE.—Discontinued January 29.

## SENECA RIVER BELOW LOCK No. 4, WATERLOO

This station is located just below the new Barge canal lock No. 4, in the village of Waterloo.

The concrete staff gage in the lower end of the lock is read. The water-surface indicated is that of the Seneca river about 2,000 feet above the gage formerly read below old lock No. 2 at the junction of the old canal and the river.

Daily elevation of water-surface (B. C. Datum) of SENECA RIVER BELOW LOCK No. 4, WATERLOO, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	431.9	d	430.8	.....	430.8	431.0	433.1	.....	432.1
2.....	431.8	d	430.0	.....	430.7	431.2	.....	.....	432.0
3.....	.....	d	.....	431.0	430.6	431.9	433.2	.....	431.2
4.....	432.25	d	430.8	430.5	430.6	431.1	433.1	.....	.....
5.....	431.5	d	.....	430.6	430.7	.....	433.2	.....	432.3
6.....	431.4	d	430.5	430.9	.....	431.5	433.4	.....	432.3
7.....	430.9	d	430.7	430.8	430.5	431.9	433.1	.....	422.4
8.....	430.55	d	430.65	430.8	429.9	431.9	433.0	432.3	431.9
9.....	430.3	d	430.9	.....	430.9	431.8	.....	432.3	432.3
10.....	.....	d	430.3	430.5	430.6	431.9	.....	432.0	431.2
11.....	430.05	d	430.3	430.8	430.5	431.6	.....	432.0	.....
12.....	430.1	d	.....	430.6	.....	.....	.....	432.1	431.6
13.....	429.9	d	430.5	431.0	.....	430.6	.....	432.0	431.9
14.....	429.95	d	430.5	430.4	430.6	431.5	.....	.....	431.7
15.....	431.1	d	430.5	430.1	431.1	431.4	.....	432.0	431.5
16.....	430.7	d	430.7	.....	431.2	432.4	.....	432.1	431.4
17.....	.....	d	430.4	430.0	431.8	432.6	.....	432.0	431.6
18.....	431.0	431.0	430.5	430.0	431.1	432.6	.....	431.6	431.0
19.....	431.2	431.5	.....	430.0	431.1	.....	.....	432.0	431.5
20.....	430.8	431.4	430.6	430.5	.....	433.1	.....	431.9	431.4
21.....	.....	.....	430.6	430.6	431.5	433.2	.....	.....	431.3
22.....	431.0	431.3	430.5	430.8	.....	433.3	.....	431.6	431.2
23.....	431.7	431.3	.....	.....	431.3	433.3	.....	431.4	431.8
24.....	.....	431.6	430.5	430.7	431.3	433.2	.....	431.3	431.5
25.....	431.7	.....	.....	430.8	431.6	433.2	.....	431.6	.....
26.....	431.7	431.3	.....	430.9	431.7	.....	.....	431.5	431.7
27.....	433.11	430.9	430.8	430.7	.....	433.0	.....	431.2	431.4
28.....	433.11	.....	430.8	430.6	431.9	433.1	.....	.....	431.2
29.....	431.5	431.3	430.8	430.5	431.9	433.2	.....	431.8	431.5
30.....	428.0	.....	430.7	.....	.....	433.3	.....	432.3	431.4
31.....	d	.....	430.8	430.8	.....	433.1	.....	432.4	.....

d Lock was unwatered October 31 to November 17; gage is inside of needle-beam.

## SENECA RIVER AT FREE BRIDGE

This station was established January 1, 1915, and is located at the highway bridge across the Seneca river on the highway leading east from Seneca Falls and about 5 miles distant therefrom, and about one mile north or downstream from Barge canal lock No. 1 of the Cayuga and Seneca canal at the foot of Cayuga lake.

The gage is a direct-reading staff, read twice daily to tenths with occasional half-tenth readings.

Daily elevation of water-surface (B. C. Datum) of SENECA RIVER AT FREE BRIDGE NEAR CAYUGA, for the nine months ending June 30, 1916. C. D. Martin, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	378.2	380.4	380.6	380.2	381.1	380.5	385.6	383.02	382.55
2.....	378.4	380.4	380.7	380.95	381.05	380.48	386.05	382.55	382.3
3.....	378.35	380.3	380.95	382.15	381.05	380.4	386.3	382.35	382.48
4.....	378.6	380.4	380.85	382.8	380.55	380.4	386.4	382.45	382.75
5.....	379.05	380.4	380.65	383.05	380.3	380.38	386.05	382.4	383.0
6.....	379.8	380.5	380.47	383.35	380.85	380.2	385.8	382.4	383.15
7.....	379.6	380.6	380.4	383.47	380.82	380.2	385.55	382.4	383.0
8.....	379.4	380.6	380.32	383.45	380.8	380.3	385.35	382.3	382.9
9.....	379.3	380.6	380.3	382.9	380.9	380.3	385.15	382.2	382.8
10.....	379.2	380.6	380.27	382.55	381.05	380.45	384.95	381.9	382.9
11.....	379.15	380.5	380.2	382.2	381.17	380.55	384.75	379.6	382.8
12.....	379.0	380.6	380.1	381.9	381.1	380.95	384.65	379.0	382.95
13.....	378.85	380.7	380.1	381.95	381.0	381.45	384.38	379.25	382.9
14.....	378.8	380.6	381.0	381.8	381.1	381.65	384.3	379.2	382.9
15.....	379.05	380.6	380.7	381.1	380.35	381.85	384.3	379.25	382.7
16.....	379.2	380.6	380.0	380.7	380.75	382.0	384.28	380.2	382.7
17.....	379.3	380.7	379.9	380.6	380.85	381.75	384.1	382.2	382.45
18.....	379.5	380.7	380.1	380.6	380.9	381.8	383.95	383.15	382.2
19.....	380.0	380.7	380.45	380.5	380.7	381.6	383.75	383.65	383.55
20.....	380.45	380.7	380.8	380.47	380.8	381.6	383.65	383.8	383.82
21.....	380.65	381.05	380.9	380.42	381.0	381.7	383.6	383.55	383.9
22.....	380.6	381.0	380.95	380.8	380.47	381.7	383.6	383.4	383.85
23.....	380.6	381.0	381.0	381.1	380.4	381.6	383.7	383.4	383.55
24.....	380.6	381.0	381.1	380.95	380.43	381.3	383.75	383.5	383.45
25.....	380.5	380.85	381.25	380.55	380.45	381.0	383.4	383.5	383.3
26.....	380.5	380.8	381.4	380.75	380.3	381.45	383.6	383.48	383.3
27.....	380.5	380.8	381.6	380.65	380.42	381.65	383.5	383.38	383.28
28.....	380.5	380.7	381.15	380.97	380.5	382.15	383.58	383.28	383.25
29.....	380.5	380.7	380.7	380.85	380.5	383.2	383.5	383.15	382.9
30.....	380.4	380.6	380.45	380.55	.....	384.1	383.6	382.95	382.9
31.....	380.4	.....	380.05	380.45	.....	384.95	.....	382.75	.....

## SENECA RIVER AT SAVANNAH

This station is located at the N. Y. C. & H. R. R. R. bridge crossing the Seneca river about  $11\frac{1}{4}$  miles west of Fox Ridge station and about 2 miles east of Savannah. It was established May 4, 1904, and is read twice daily — at 7 A. M. and 5 P. M. — to half-tenths, to determine water-surface elevations only.

The present gage is a standard chain gage located at the middle of the downstream side of the upstream bridge.

Daily elevation of water-surface (B. C. Datum) of SENECA RIVER AT N. Y. C. R. R. BRIDGE, NEAR FOX RIDGE, SAVANNAH P. O., for the nine months ending June 30, 1916. A. C. Carr, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1 .....	377.50	378.75	378.85	378.82	379.35	379.08	384.42	381.75	380.92
2 .....	377.55	378.73	378.90	379.52	379.30	379.08	385.05	381.05	380.62
3 .....	377.90	378.65	379.02	380.55	379.25	379.00	385.25	380.72	380.75
4 .....	377.85	378.63	379.12	381.15	378.95	378.90	385.25	380.70	381.00
5 .....	377.90	378.70	378.97	381.32	379.05	378.90	385.15	380.68	381.30
6 .....	378.45	378.73	378.77	381.67	379.05	378.90	384.95	380.58	381.45
7 .....	378.53	378.80	378.65	381.90	379.15	378.90	384.65	380.50	381.40
8 .....	378.25	378.80	378.53	381.67	379.55	378.88	384.42	380.45	381.28
9 .....	377.95	378.83	378.50	381.65	379.90	379.00	384.20	380.38	381.15
10 .....	377.90	378.90	378.50	381.22	379.90	379.12	383.85	380.10	381.08
11 .....	377.80	378.90	378.45	380.82	379.80	379.28	383.65	378.80	381.12
12 .....	377.85	378.90	378.45	380.55	379.80	379.45	383.42	378.22	381.20
13 .....	377.75	378.90	378.47	380.40	379.80	379.85	383.22	378.08	381.20
14 .....	377.78	378.90	378.45	380.25	379.70	380.05	382.88	378.10	381.12
15 .....	377.88	378.93	378.45	379.92	379.27	380.20	382.80	378.10	381.02
16 .....	378.10	379.00	378.45	379.52	379.42	380.20	382.68	378.58	381.00
17 .....	378.20	379.00	378.45	379.40	379.45	380.28	382.42	380.22	381.15
18 .....	378.15	379.00	378.53	379.75	379.45	380.32	382.30	381.30	381.42
19 .....	378.50	379.00	378.83	379.67	379.45	380.20	382.20	381.90	381.80
20 .....	378.95	379.00	379.05	379.45	379.60	380.15	382.15	382.25	382.20
21 .....	379.00	379.10	379.02	379.40	379.50	380.02	382.10	382.22	382.35
22 .....	378.95	379.30	379.00	379.37	379.15	380.00	382.18	382.10	382.32
23 .....	378.78	379.30	378.97	379.55	379.45	379.95	382.28	382.00	382.18
24 .....	378.93	379.25	378.93	379.43	379.90	379.90	382.00	382.00	382.00
25 .....	378.95	379.13	379.10	379.15	379.90	379.85	382.18	382.00	381.85
26 .....	378.95	379.10	379.52	379.20	379.00	379.82	381.98	382.00	381.68
27 .....	378.93	379.08	379.90	379.20	379.00	380.05	382.05	381.92	381.65
28 .....	378.85	379.00	379.60	379.17	379.18	380.30	382.05	381.78	381.65
29 .....	378.78	378.90	379.35	379.10	379.25	381.22	382.10	381.65	381.50
30 .....	378.75	378.85	379.17	379.10	.....	382.35	382.00	381.48	381.18
31 .....	378.75	.....	378.67	379.00	.....	383.37	.....	381.32	.....

## SENECA RIVER AT MOSQUITO POINT

This station is located on the Seneca river at Mosquito Point highway bridge about 3 miles north of Port Byron village and just below the confluence of Owasco outlet and the Seneca river.

The station was established April 21, 1904.

The present gage is a standard chain gage located on the upstream side of the span adjacent to the left bank of the Seneca river and is read once daily — at 9 A. M.— to determine water-surface elevations only.

Daily elevation of water-surface (B. C. Datum) of SENECA RIVER AT MOSQUITO POINT BRIDGE, PORT BYRON, for the nine months ending June 30, 1916. William Prettie, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1	374.4	375.7	375.7	376.2	376.4	376.1	383.0	379.5	378.3
2	374.6	375.7	375.7	376.4	376.3	376.1	383.8	379.2	377.9
3	375.2	375.5	375.7	376.8	376.3	376.0	384.1	378.8	378.0
4	375.3	375.3	375.9	377.9	376.2	376.0	384.2	378.1	378.1
5	375.6	375.5	375.9	378.2	376.2	376.1	384.2	377.8	378.3
6	375.8	375.5	375.7	378.8	376.2	376.2	383.9	377.8	378.5
7	375.9	375.6	375.2	379.0	376.4	376.2	383.6	377.6	378.5
8	375.8	375.7	375.3	379.0	376.7	376.3	383.3	377.5	378.4
9	375.6	375.7	375.3	378.8	376.9	376.3	383.1	377.3	378.3
10	375.6	375.6	375.2	378.6	376.9	376.2	382.8	377.1	378.2
11	375.6	375.6	375.1	378.3	377.0	376.2	382.5	376.5	378.2
12	375.5	375.6	375.2	378.1	377.0	376.3	382.3	375.8	378.2
13	375.3	375.6	375.4	377.8	376.9	376.6	382.0	375.1	378.1
14	375.1	375.8	375.5	377.6	376.8	376.9	381.8	375.0	378.0
15	375.3	375.9	375.5	377.4	376.6	377.0	381.5	375.3	377.9
16	375.3	375.9	375.6	377.1	376.5	377.1	381.3	375.5	378.0
17	375.6	375.9	375.7	376.9	376.5	377.1	381.2	377.0	378.2
18	375.6	375.8	375.9	376.7	376.4	377.2	380.9	378.3	378.3
19	375.7	375.8	376.0	376.7	376.4	377.3	380.6	379.0	378.5
20	375.9	375.8	376.2	376.6	376.5	377.3	380.3	379.7	379.0
21	376.1	375.9	376.2	376.5	376.5	377.2	380.1	379.9	379.3
22	376.0	375.9	376.1	376.4	376.4	377.2	380.0	379.8	379.4
23	376.0	376.1	376.1	376.6	376.3	377.1	380.1	379.8	379.2
24	375.8	376.1	376.1	376.7	376.2	377.1	380.2	379.6	379.2
25	375.9	376.1	376.3	376.5	376.3	377.1	380.1	379.7	379.1
26	375.9	376.1	376.8	376.4	376.3	377.3	379.9	379.6	378.9
27	375.9	376.0	377.2	376.3	376.2	377.4	379.9	379.5	378.7
28	375.8	376.0	377.1	376.3	376.1	377.6	379.8	379.3	378.6
29	375.8	376.0	376.9	376.4	376.1	378.3	379.8	379.1	378.3
30	375.7	375.8	376.7	376.4	.....	379.8	379.6	378.8	378.1
31	375.6	.....	376.4	376.4	.....	381.6	.....	378.6	.....

## SENECA RIVER AT CROSS LAKE

This station is located at the highway bridge across the Seneca river about one mile above the entrance of the Seneca river into Cross lake and about 3 miles northwest of the village of Jordan. This station was established May 1, 1904.

The present gage is a staff on a boat-house on the east or right-hand bank of the river immediately above the bridge. It is read twice daily — at 7 A. M. and 2 P. M. — to the nearest tenth of a foot. April 1 to 9, inclusive, read to quarter-inches.

Daily elevation of water-surface (B. C. Datum) of SENECA RIVER AT CROSS LAKE  
JORDAN, for the nine months ending June 30, 1916. M. Quimby, Observer

DA	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	374.35	375.5	375.5	375.9	376.1	375.8	382.06	378.55	377.55
2.....	374.5	375.45	375.5	376.45	376.1	375.8	382.52	378.25	377.25
3.....	375.06	375.3	375.55	377.2	376.1	375.8	382.74	377.7	377.35
4.....	375.3	375.2	375.6	377.4	376.0	375.8	382.80	377.35	377.5
5.....	375.3	375.3	375.6	377.65	375.9	375.9	382.78	377.1	377.6
6.....	375.6	375.3	375.6	378.2	376.0	375.9	382.65	377.0	377.7
7.....	375.7	375.35	375.35	378.4	376.1	375.9	382.44	376.9	377.7
8.....	375.65	375.45	375.2	378.35	376.1	375.9	382.18	376.85	377.7
9.....	375.5	375.4	375.1	378.15	376.1	375.9	381.84	376.7	377.6
10.....	375.5	375.4	375.0	377.85	376.2	375.9	381.45	376.45	377.5
11.....	375.4	375.4	374.9	377.55	376.2	375.8	381.15	376.05	377.5
12.....	375.4	375.4	374.95	377.3	376.2	375.95	380.95	375.3	377.6
13.....	375.25	375.4	375.0	377.2	376.2	376.2	380.65	374.95	377.5
14.....	376.1	375.55	375.0	377.0	376.15	376.4	380.5	374.9	377.4
15.....	375.15	375.7	375.0	376.75	376.0	376.5	380.3	375.2	377.3
16.....	375.3	375.6	375.15	376.5	375.9	376.6	380.1	376.45	377.4
17.....	375.4	375.6	375.3	376.3	375.9	376.6	379.9	377.1	377.5
18.....	375.45	375.6	375.55	376.25	375.9	376.6	379.75	377.55	377.65
19.....	375.55	375.6	375.8	376.2	375.9	376.7	379.5	378.1	377.85
20.....	375.7	375.6	375.9	376.05	375.9	376.7	379.3	378.55	378.1
21.....	375.8	375.75	375.9	376.0	376.0	376.6	379.1	378.8	378.25
22.....	375.75	375.9	375.9	376.1	376.0	376.6	378.95	378.9	378.4
23.....	375.7	375.8	375.8	376.25	376.0	376.6	379.0	378.85	378.35
24.....	375.65	375.8	375.8	376.30	375.9	376.6	379.0	378.8	378.2
25.....	375.75	375.8	376.1	376.15	375.9	376.6	379.0	378.7	378.2
26.....	375.6	375.75	376.55	376.0	375.9	376.65	378.8	378.6	378.05
27.....	375.55	375.7	376.7	376.1	375.9	376.8	378.8	378.5	377.9
28.....	375.5	375.7	376.65	376.1	375.9	376.95	378.7	378.4	377.75
29.....	375.6	375.7	376.5	376.2	375.8	377.5	378.7	378.25	377.6
30.....	375.4	375.6	376.1	376.1	.....	378.95	378.7	378.05	377.5
31.....	375.45	.....	376.0	376.2	.....	380.2	.....	377.8	.....

## SENECA RIVER AT JACK'S REEF

This station, established April 20, 1904, is located on the Seneca river about 2 miles downstream from Cross lake and about 1,700 feet below what is commonly known as State Ditch bridge across the canal cut-off on the road leading from the village of Jack's Reef, near Memphis.

The present gage is a vertical staff fastened to a tree on the left-hand bank of the stream, and is read once daily — at 9 A. M. — to the nearest tenth of a foot.

Daily elevation of water-surface (B. C. Datum) of SENECA RIVER AT FOOT OF JACK'S REEF, MEMPHIS, for the nine months ending June 30, 1916. Wm. H. Burns, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	374.1	375.3	375.2	375.6	375.9	375.8	379.2	378.0	377.3
2.....	374.1	375.2	375.2	375.9	375.8	375.8	380.1	377.8	377.0
3.....	374.5	375.1	375.3	376.9	375.9	375.8	380.9	377.4	377.0
4.....	375.0	375.0	375.4	377.0	375.8	375.7	381.4	377.0	377.1
5.....	375.1	375.0	375.4	377.1	375.7	375.7	381.6	376.8	377.2
6.....	375.4	375.0	375.3	377.3	375.8	375.7	381.6	376.7	377.3
7.....	375.5	375.1	375.2	377.5	375.9	375.6	381.5	376.6	377.3
8.....	375.4	375.3	375.1	377.5	375.9	375.6	381.2	376.5	377.3
9.....	375.3	375.3	374.9	377.5	375.9	375.6	380.9	376.4	377.2
10.....	375.3	375.2	374.9	377.3	376.0	375.6	380.6	376.2	377.0
11.....	375.3	375.2	374.8	377.1	376.0	375.5	380.3	375.9	377.1
12.....	375.2	375.1	374.7	377.0	376.0	375.5	380.1	375.4	377.1
13.....	375.0	375.2	374.9	376.9	376.0	375.6	379.9	375.0	377.1
14.....	374.9	375.3	374.8	376.8	375.9	375.6	379.7	374.7	377.0
15.....	375.0	375.4	374.8	376.6	375.8	375.7	379.5	375.0	376.9
16.....	375.1	375.4	374.9	376.3	375.8	375.7	379.3	375.1	377.0
17.....	375.3	375.3	375.1	376.2	375.8	375.8	379.1	376.1	377.1
18.....	375.4	375.3	375.4	376.2	375.7	375.8	379.0	377.2	377.2
19.....	375.3	375.3	375.5	376.1	375.7	375.7	378.8	377.8	377.4
20.....	375.4	375.3	375.6	376.0	375.8	375.7	378.6	378.2	377.6
21.....	375.6	375.4	375.6	375.9	375.8	375.7	378.4	378.4	377.9
22.....	375.6	375.6	375.5	375.9	375.7	375.8	378.3	378.3	377.9
23.....	375.5	375.6	375.6	376.0	375.7	375.8	378.3	378.3	377.9
24.....	375.4	375.5	375.7	376.1	375.7	375.8	378.2	378.2	377.8
25.....	375.4	375.4	375.8	376.0	375.8	375.9	378.2	378.2	377.7
26.....	375.4	375.4	376.1	375.9	375.8	375.9	378.3	378.1	377.7
27.....	375.4	375.4	376.4	375.8	375.9	376.0	378.3	378.0	377.5
28.....	375.3	375.4	376.2	375.9	375.9	376.3	378.2	377.9	377.3
29.....	375.3	375.3	376.0	375.9	375.9	376.9	378.1	377.8	377.2
30.....	375.2	375.2	375.9	375.9	.....	377.5	378.0	377.7	377.1
31.....	375.2	.....	375.8	375.9	.....	378.0	.....	377.5	.....

## SENECA RIVER ABOVE DAM, BALDWINSVILLE

This station, located above the dam in the Seneca river at Baldwinsville 12.5 miles above the confluence of the Seneca and Oneida rivers at Three River Point, was established November 12, 1898, by the United States Deep Waterways Survey, and is now maintained by this Department.

At Baldwinsville the old dam, crest Elev. 372.28, has been raised in connection with the construction of the Barge canal by the addition of an ogee concrete crest having a total length of 352 feet at Elev. 374.0, and an automatic sluice-gate having a clear opening 50 feet wide designed to open as the water-surface above the dam rises, has replaced the necessary amount of old crest at the north end of the dam.

The present gage is a staff located since April first on the upper guide-wall of the new lock. It is read twice daily — at 8 A. M. and 4 P. M. — to half-tenths.

Daily elevation of water-surface (B. C. Datum) of SENECA RIVER ABOVE DAM AT BALDWINSVILLE, for the nine months ending June 30, 1916. Timothy Cronin, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	374.00	374.90	374.87	375.20	375.35	375.05	378.35	376.55	376.28
2.....	374.20	374.90	374.85	375.65	375.35	375.00	378.75	376.40	376.12
3.....	374.75	374.73	374.83	376.12	375.35	374.93	378.90	376.02	376.20
4.....	374.80	374.60	374.95	376.10	375.30	375.00	378.90	375.85	376.35
5.....	374.83	374.57	374.95	376.33	375.20	375.17	378.92	375.72	376.30
6.....	375.05	374.65	374.90	376.63	375.37	375.05	378.75	375.65	376.30
7.....	375.15	374.90	374.70	376.70	375.35	374.95	378.65	375.72	376.28
8.....	375.07	374.90	374.57	376.63	374.95	374.87	378.48	375.50	376.25
9.....	375.17	374.90	374.47	376.55	374.95	374.90	378.35	375.60	376.22
10.....	375.23	374.75	374.30	376.33	375.10	374.87	378.18	375.32	376.25
11.....	375.07	374.80	374.30	376.17	375.15	374.85	378.00	375.12	376.32
12.....	374.90	374.75	374.47	376.00	375.25	374.90	377.95	374.60	376.25
13.....	374.77	374.90	374.30	375.95	375.35	375.00	377.82	374.62	376.18
14.....	374.73	375.10	374.35	375.80	375.23	375.20	377.70	374.75	376.10
15.....	374.75	375.10	374.20	375.60	375.07	375.25	377.58	374.65	376.08
16.....	374.85	375.07	374.50	375.55	375.03	375.25	377.30	374.78	376.10
17.....	375.07	374.93	374.75	375.25	375.05	375.25	377.35	375.65	376.28
18.....	375.00	374.80	375.03	375.05	375.10	375.33	377.30	376.32	376.42
19.....	374.95	374.83	375.23	375.05	375.05	375.50	377.05	376.60	376.40
20.....	375.13	374.95	375.25	374.97	375.27	375.47	376.90	376.85	376.50
21.....	375.17	375.13	375.20	375.00	375.10	375.35	376.78	377.02	376.62
22.....	375.07	375.17	375.20	375.15	375.03	375.35	376.72	376.92	376.65
23.....	375.05	375.07	375.15	375.27	375.05	375.33	376.90	376.90	376.65
24.....	375.10	375.05	375.15	375.40	375.13	375.33	376.82	376.85	376.60
25.....	375.03	375.10	375.40	375.27	375.05	375.37	376.78	376.85	376.70
26.....	374.93	374.97	375.83	375.20	375.05	375.47	376.65	376.80	376.55
27.....	374.87	375.00	375.75	375.30	375.17	375.50	376.68	376.75	376.38
28.....	374.90	375.20	375.70	375.33	375.05	375.60	376.62	376.80	376.30
29.....	374.90	375.03	375.63	375.33	375.03	376.07	376.60	376.65	376.25
30.....	374.87	374.93	375.50	375.45	.....	376.90	376.70	376.55	376.18
31.....	374.95	.....	375.20	375.37	.....	377.75	.....	376.35	.....



**SENECA RIVER BELOW DAM, BALDWINSVILLE**

This station located below the dam in the Seneca river at Baldwinsville was established November 12, 1898, by the United States Deep Waterways Survey and is now maintained by this Department.

The present gage is a staff located since April first on the lower guide-wall of the new lock.

Readings are made twice daily — at 8 A. M. and 4 P. M. During October to March, inclusive, gage was read to nearest tenth of a foot, April to June, inclusive, to half-tenths.

Daily elevation of water-surface (B. C. Datum) of SENECA RIVER BELOW DAM AT BALDWINSVILLE, for the nine months ending June 30, 1916. Timothy Cronin, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	364.55	365.25	365.25	365.5	365.85	365.75	370.65	367.08	365.98
2.....	364.7	365.25	365.25	365.75	365.9	365.65	371.2	366.92	365.75
3.....	364.75	365.25	365.25	366.8	365.85	365.65	371.6	366.65	365.62
4.....	365.05	365.15	365.25	366.85	365.75	365.65	371.7	366.35	365.7
5.....	365.2	365.25	365.25	367.25	365.7	365.5	371.7	366.1	365.72
6.....	365.5	365.25	365.25	367.65	365.5	365.6	371.55	365.85	365.9
7.....	365.65	365.1	365.25	367.85	365.7	365.65	371.35	365.7	365.88
8.....	365.5	365.25	365.2	368.0	365.55	365.65	371.15	365.62	365.78
9.....	365.2	365.25	365.15	368.05	365.9	365.65	370.85	365.5	365.72
10.....	365.1	365.25	365.15	367.8	365.95	365.55	370.6	365.5	365.55
11.....	365.15	365.2	365.1	367.3	366.05	365.55	370.3	365.22	365.4
12.....	365.15	365.2	364.85	366.95	366.0	365.55	369.95	364.7	365.5
13.....	365.05	365.25	365.15	366.8	365.85	365.75	369.65	364.35	365.55
14.....	364.95	365.05	365.15	366.7	366.05	365.75	369.35	364.22	365.55
15.....	364.85	365.3	365.1	366.4	365.95	365.85	369.15	364.3	365.5
16.....	364.9	365.25	364.9	366.0	365.8	365.95	368.9	364.28	365.6
17.....	364.95	365.3	365.2	366.05	365.7	365.95	368.78	365.35	365.8
18.....	365.1	365.3	365.4	366.05	365.65	366.05	368.55	366.38	365.75
19.....	365.2	365.4	365.45	366.3	365.65	365.95	368.28	366.68	365.85
20.....	365.4	365.45	365.55	366.35	365.55	366.05	368.05	366.9	366.12
21.....	365.5	365.45	365.55	366.1	365.8	366.05	367.88	367.0	366.22
22.....	365.55	365.65	365.5	365.95	365.7	366.05	367.7	367.1	366.3
23.....	365.5	365.55	365.5	365.85	365.4	366.0	367.65	367.1	366.3
24.....	365.3	365.55	365.45	365.95	365.35	365.75	367.72	367.1	366.2
25.....	365.45	365.5	365.55	365.9	365.4	365.65	367.78	366.98	366.18
26.....	365.45	365.45	366.05	365.8	365.4	365.7	367.52	366.88	366.02
27.....	365.45	365.45	366.25	365.75	365.4	365.85	367.45	366.72	365.88
28.....	365.3	365.25	366.25	365.85	365.5	366.05	367.32	366.5	365.7
29.....	365.25	365.35	366.1	365.85	365.7	366.9	367.22	366.42	365.65
30.....	365.25	365.3	366.05	365.75	.....	367.95	367.1	366.28	365.5
31.....	365.2	.....	365.7	365.85	.....	369.15	.....	366.05	.....

## SENECA RIVER AT MUD LOCK, NEAR LONG BRANCH

This station is located at Mud lock No. 5, on the old Oswego canal at its junction with the Seneca river, about  $\frac{1}{4}$  mile below the mouth of Onondaga outlet.

The gage is a staff located on the timber approach below the old Mud lock and is read once daily to tenths of a foot.

Daily elevation of water-surface (B. C. Datum) of SENECA RIVER AT MUD LOCK, NEAR LONG BRANCH, LIVERPOOL P. O., for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	364.5	364.1	b	c	c	365.3	368.9	366.5	365.6
2.....	364.5	364.1	b	c	c	365.3	369.7	366.4	365.5
3.....	364.5	364.0	b	c	c	365.2	370.4	366.2	365.3
4.....	364.5	363.9	b	c	c	365.1	370.6	366.1	d
5.....	364.8	364.0	b	c	c	a	370.7	365.8	d
6.....	365.0	364.0	b	c	c	365.0	370.5	365.5	d
7.....	364.9	364.1	b	c	c	365.0	370.3	365.4	d
8.....	364.8	364.3	b	c	c	365.0	370.2	365.3	d
9.....	364.7	364.4	b	c	c	364.9	370.1	365.2	d
10.....	364.6	364.5	b	c	c	364.8	369.9	365.2	d
11.....	364.4	364.6	b	c	c	364.8	369.5	365.0	d
12.....	364.5	364.6	b	c	c	364.8	369.1	364.9	d
13.....	364.3	364.6	b	c	c	364.8	368.8	364.8	d
14.....	364.4	364.7	b	c	c	364.9	368.7	364.8	d
15.....	364.4	364.7	b	c	c	364.9	368.6	364.7	d
16.....	364.4	364.7	b	c	c	364.9	368.2	364.7	d
17.....	364.4	364.7	b	c	c	364.8	368.1	365.1	d
18.....	364.6	364.6	b	c	c	364.8	367.9	366.1	d
19.....	364.7	364.6	b	c	c	364.7	367.6	366.3	d
20.....	364.8	364.6	b	c	c	364.7	367.4	366.4	d
21.....	364.8	364.5	364.4	c	c	364.7	367.1	366.5	d
22.....	364.8	364.4	364.4	c	c	364.7	367.0	366.5	d
23.....	364.7	364.4	364.4	c	c	364.7	367.0	366.6	d
24.....	364.7	364.4	364.5	c	c	364.6	367.0	366.6	d
25.....	365.1	364.5	364.5	c	c	364.6	367.0	366.5	d
26.....	364.4	364.5	364.9	c	c	364.7	366.8	366.4	d
27.....	364.3	364.5	365.0	c	c	364.7	366.8	366.2	d
28.....	364.2	b	365.3	c	c	365.0	366.7	366.1	d
29.....	364.2	b	365.2	c	c	365.7	366.7	366.0	d
30.....	364.2	b	364.9	c	c	366.5	366.5	365.9	d
31.....	364.1	.....	364.8	c	c	367.9	.....	365.7	d

a No record.

b From November 28 to December 20, inclusive, gage was out of order and records taken being unreliable are not published.

c Record for January and February unreliable and not published. Record for May 15 to 17, inclusive, doubtful.

d Gage out of order June 4 to 30.

## SENECA RIVER AT BELGIUM

This station is located at the highway bridge across the Seneca river at Belgium. It was established April 14, 1904.

The staff gage located on the docking on the right-hand bank of the stream, a short distance above the highway bridge, was superseded in March by a chain gage on the new bridge. It was read once daily—at 8 A. M., since June 19, at 7 A. M.—to hundredths of a foot.

Daily elevation of water-surface (B. C. Datum) of SENECA RIVER AT HIGHWAY BRIDGE AT BELGIUM, for the nine months ending June 30, 1916. A. R. Gates, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1	363.90	364.10	364.09	364.42	365.10	365.01	367.80	365.66	365.15
2	364.05	364.05	364.00	364.66	365.06	364.97	368.70	365.80	364.92
3	364.15	364.02	363.98	365.42	365.02	364.98	369.05	365.68	364.86
4	364.11	364.09	364.10	365.53	364.95	364.95	369.16	365.55	364.85
5	364.17	364.10	364.15	365.51	364.85	364.96	369.25	365.23	364.72
6	364.55	364.10	364.05	366.05	364.80	364.98	369.16	365.02	364.98
7	364.48	364.01	364.10	366.32	364.75	365.01	369.05	365.05	364.89
8	364.49	364.00	364.00	366.25	364.86	364.95	369.30	364.85	364.79
9	364.31	364.04	364.02	366.22	364.96	364.90	368.71	364.79	364.82
10	364.15	364.00	364.10	365.95	364.92	364.80	368.51	364.85	364.76
11	364.19	364.00	364.00	365.75	364.95	364.71	368.27	364.72	364.70
12	364.00	363.96	364.10	365.42	364.85	364.75	368.00	364.40	364.70
13	364.20	363.95	364.00	365.25	364.80	364.90	367.79	364.30	364.70
14	364.10	363.94	364.00	365.10	364.85	364.82	367.61	364.20	364.69
15	364.00	363.90	363.92	365.00	364.75	364.80	367.50	364.15	364.65
16	364.10	364.05	364.10	364.85	364.68	365.00	367.30	364.10	364.80
17	364.00	364.20	364.20	364.85	364.70	364.90	367.11	364.80	364.95
18	364.16	364.25	364.30	364.91	364.70	364.89	366.85	365.49	364.90
19	364.23	364.36	364.40	365.16	364.70	364.95	366.70	365.77	364.88
20	364.30	364.36	364.37	365.35	364.80	364.89	366.55	365.8	364.99
21	364.39	364.40	364.22	365.06	364.85	364.82	366.40	365.80	365.05
22	364.40	364.31	364.21	364.89	364.70	364.80	366.30	365.79	365.12
23	364.25	364.39	364.15	365.09	364.65	364.70	366.31	365.49	365.13
24	364.21	364.36	364.12	364.92	364.60	364.50	366.32	365.89	365.10
25	364.16	364.35	364.30	364.85	364.62	364.45	366.23	365.76	365.20
26	364.10	364.25	364.75	364.82	364.76	364.50	366.12	365.61	364.90
27	364.11	364.15	365.00	364.86	364.78	364.58	366.02	365.50	364.93
28	363.99	363.99	365.02	365.10	364.92	364.48	365.99	365.46	364.71
29	363.91	364.06	364.95	365.15	365.10	364.99	365.90	365.37	364.70
30	363.99	364.11	364.90	365.10	.....	365.79	365.78	365.25	364.66
31	364.15	.....	364.61	365.05	.....	366.35	.....	365.15	.....

## KEUKA LAKE

### DESCRIPTION

Keuka or "Crooked" lake is one of the finger group of lakes in central New York. It lies west of the southerly part of Seneca lake into which it drains. The lake is long and narrow, lying generally in a north and south direction, the northerly portion being divided into two approximately parallel branches. The shores of the lake rise rather abruptly from the water's edge. It has a total drainage area of 178.47 square miles, of which 17.51 square miles, or 9.8 per cent, is water-surface.

The lake is retained by a State dam in the outlet at Penn Yan. The outflow of the lake is practically controlled by the flow through two mills located at each end of the State dam, the water only occasionally flowing over the crest. This lake has a natural range of about 6 feet and according to occasional records of a gage maintained on the outlet about a fourth of a mile above the State dam

by Mr. W. N. Wise of Penn Yan, the surface rose to 4 feet above the crest of the dam in April, 1870, and fell to 6 feet below the crest in December, 1899, giving an extreme range of 10 feet. The surface of the lake is at elevation about 715, Barge canal datum.

#### KEUKA LAKE AT PENN YAN

This station is located at Penn Yan at the foot of Keuka lake. It was established January 1, 1915, to determine lake level. The gage is located on the outlet about three-quarters of a mile from the lake and above the State dam. It is a staff attached to a pile near the right bank about 100 feet above the upper bridge. The gage is read once daily — at 8 A. M., week-days and 6 P. M., Sundays. Gage heights only are published, as Barge canal levels have not as yet been extended to this locality. For earlier records in this vicinity see Keuka lake description on preceding page.

Daily gage height, in feet, of KEUKA LAKE AT PENN YAN, for the nine months ending June 30, 1916. E. F. Garbus, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	5.2	5.1	4.5	4.1	4.5	4.2	6.8	9.0	9.0
2.....	5.2	5.1	4.5	4.1	4.4	4.15	7.0	9.0	8.9
3.....	5.2	5.1	4.4	4.2	4.4	4.15	7.2	8.9	8.9
4.....	5.2	5.0	4.4	4.3	4.4	4.15	7.3	8.9	8.9
5.....	5.4	5.0	4.4	4.3	4.4	4.15	7.3	8.9	8.9
6.....	5.4	4.9	4.4	4.6	4.4	4.2	7.3	8.9	8.8
7.....	5.4	4.9	4.3	4.6	4.4	4.2	7.4	8.9	8.8
8.....	5.3	4.9	4.3	4.6	4.4	4.3	7.4	8.8	8.9
9.....	5.3	4.9	4.3	4.7	4.4	4.3	7.4	8.8	8.9
10.....	5.3	4.8	4.3	4.7	4.4	4.25	7.5	8.8	8.9
11.....	5.2	4.8	4.2	4.6	4.4	4.25	7.5	8.8	9.0
12.....	5.2	4.8	4.2	4.6	4.4	4.25	7.6	8.7	9.0
13.....	5.2	4.8	4.2	4.6	4.3	4.2	7.7	8.7	9.0
14.....	5.2	4.7	4.2	4.6	4.3	4.2	7.9	8.7	9.0
15.....	5.3	4.7	4.1	4.6	4.3	4.2	8.0	8.7	9.0
16.....	5.3	4.7	4.1	4.6	4.3	4.2	8.0	8.7	9.1
17.....	5.3	4.6	4.1	4.5	4.3	4.15	8.1	9.2	9.1
18.....	5.3	4.6	4.1	4.5	4.25	4.15	8.1	9.2	9.7
19.....	5.4	4.6	4.1	4.5	4.25	4.15	8.1	9.2	9.7
20.....	5.4	4.6	4.1	4.5	4.25	4.15	8.1	9.2	9.7
21.....	5.4	4.7	4.0	4.5	4.25	4.1	8.2	9.1	9.7
22.....	5.4	4.7	4.0	4.5	4.2	4.1	8.4	9.1	9.7
23.....	5.3	4.7	4.0	4.4	4.2	4.1	8.6	9.2	9.6
24.....	5.3	4.6	4.0	4.4	4.2	4.1	8.8	9.2	9.6
25.....	5.3	4.6	4.0	4.4	4.2	4.2	8.8	9.1	9.6
26.....	5.3	4.6	4.0	4.4	4.2	4.2	8.8	9.1	9.6
27.....	5.3	4.6	4.0	4.4	4.2	4.4	9.0	9.1	9.5
28.....	5.2	4.5	4.0	4.45	4.2	5.0	9.0	9.1	9.5
29.....	5.2	4.5	4.0	4.45	4.2	5.5	9.0	9.0	9.5
30.....	5.2	4.5	4.1	4.5	.....	6.0	9.0	9.0	9.5
31.....	5.2	.....	4.1	4.5	.....	6.4	.....	9.0	.....

## SENECA LAKE

## DESCRIPTION

Seneca lake, the largest and deepest of the finger group lakes of central New York, has a length of about 34.4 miles, and a width varying from 1 to 3 miles. The area draining directly into Seneca lake, exclusive of Keuka lake above its outlet, is 529.62 square miles, of which 67.16 square miles or 12.7 per cent is water-surface. The total drainage above the outlet at Seneca lake including Keuka lake is 708.09 square miles, of which 84.67 square miles or 12 per cent is water-surface.

This lake has the usual alluvial fan at its south end which is characteristic of these glacial lakes.

Records of water-surface fluctuations are available, as follows:

Two records in 1841 and at varying intervals from June, 1844, to December, 1846, referred to the bottom of the Geneva level, are found in the testimony of O. W. Childs, Esq., Chief Engineer, in publication entitled "Canal Frauds," Assembly document No. 100 (New York State), February 17, 1847, pp. 264-5.

1891 and 1910, inclusive, records at varying intervals of a gage maintained by Mr. Chas. W. Ingalls at Watkins.

1900-1905, inclusive, observations at irregular intervals will be found in the records of the City Engineer's office, Geneva, N. Y.

March, 1901, to October, 1904, inclusive, observations made by the State Engineering Department during the construction of the regulating works in the outlet about 1,500 feet from the lake.

1907 to 1909, inclusive, weekly records taken at the Geneva pumping station on Wednesday nights.

August, 1909, to December, 1914, inclusive, records of the gage maintained by the State Engineer's Department above the guard-gate in outlet about 1,500 feet from the lake.

September 21, 1912, to June 30, 1916, at Watkins.

January 1, 1915, to June 30, 1916, at Geneva.

The discharge from and the surface of this lake is controlled by regulating works at Waterloo about 5 miles from the lake, constructed in connection with the canalization of the Seneca river for the Barge canal. These works consist of six Taintor gates each having a clear span of 36 feet.

The proposed water-surfaces used in connection with the canalization work, referred to Barge canal datum, are as follows: Average high water, Elev. 447.0; canal pool or low navigable stage, Elev. 445.0; average low water, Elev. 444.5. By average surface is meant the surface unaffected by wind.

## SENECA LAKE AT WATKINS

This station, established September 21, 1912, is located at the head or south end of Seneca lake. The gage was originally located at the Fourth street bridge over the canal. Since January 1, 1915, a direct-reading staff located on McAnarney's dock has been read once daily — at noon.

Daily elevation of water-surface (B. C. Datum) of SENECA LAKE AT WATKINS, for the nine months ending June 30, 1916. Fred Wright, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	446.2	446.0	445.4	445.3	445.6	445.3	447.0	447.4	447.3
2.....	446.2	445.9	445.4	445.3	445.6	445.3	447.2	447.4	447.2
3.....	446.2	445.9	445.4	445.5	445.5	445.3	447.3	447.4	447.3
4.....	446.2	445.9	445.3	445.4	445.5	445.3	447.3	447.3	447.3
5.....	446.2	445.9	445.3	445.4	445.5	445.2	447.2	447.4	447.3
6.....	446.2	445.8	445.3	445.7	445.5	445.2	447.3	447.4	447.3
7.....	446.2	445.8	445.3	445.7	445.5	445.2	447.2	447.3	447.2
8.....	446.2	445.7	445.2	445.7	445.5	445.1	447.3	447.3	447.2
9.....	446.3	445.7	445.2	445.7	445.5	445.1	447.3	447.2	447.2
10.....	446.3	445.7	445.1	445.7	445.4	445.1	447.2	447.2	447.2
11.....	446.2	445.7	445.1	445.7	445.4	445.0	447.1	447.1	447.2
12.....	446.1	445.6	445.1	445.6	445.4	445.0	447.1	447.1	447.3
13.....	446.1	445.6	445.1	445.6	445.4	445.0	447.1	447.0	447.3
14.....	446.1	445.6	445.1	445.7	445.4	445.0	447.2	447.0	447.3
15.....	446.3	445.6	445.1	445.7	445.4	445.0	447.2	446.9	447.2
16.....	446.3	445.6	445.1	445.7	445.4	445.1	447.3	446.9	447.2
17.....	446.3	445.6	445.0	445.7	445.4	445.1	447.3	447.3	447.5
18.....	446.2	445.5	445.0	445.7	445.4	445.2	447.3	447.3	447.5
19.....	446.3	445.5	445.0	445.6	445.4	445.1	447.1	447.3	447.5
20.....	446.4	445.5	445.0	445.6	445.4	445.1	447.1	447.3	447.5
21.....	446.3	445.5	445.1	445.6	445.3	445.1	447.1	447.3	447.5
22.....	446.3	445.5	445.1	445.6	445.3	445.1	447.2	447.3	447.5
23.....	446.3	445.5	445.1	445.6	445.2	445.1	447.4	447.4	447.5
24.....	446.3	445.5	445.0	445.6	445.2	445.0	447.4	447.5	447.5
25.....	446.3	445.5	445.0	445.6	445.3	445.0	447.4	447.4	447.5
26.....	446.2	445.5	445.1	445.6	445.3	445.0	447.4	447.4	447.4
27.....	446.2	445.5	445.1	445.6	445.3	445.0	447.5	447.4	447.3
28.....	446.2	445.5	445.1	445.6	445.3	445.4	447.5	447.4	447.4
29.....	446.2	445.4	445.1	445.6	445.3	445.5	447.5	447.3	447.5
30.....	446.1	445.4	445.1	445.6	.....	445.8	447.5	447.3	447.5
31.....	446.1	.....	445.1	445.6	.....	446.4	.....	447.3	.....

## SENECA LAKE AT GENEVA

This station was established January 1, 1915, and was originally located near Castle street in the old Cayuga and Seneca canal harbor, but on March 19, 1915, it was moved to the Cayuga and Seneca canal just north of Lake street.

The staff gage indicates the level of Seneca lake and is read at noon.

This station replaces the station formerly maintained in the Seneca river above the guard-gate about 1,500 feet below the mouth of Seneca lake.

Daily elevation of water-surface (B. C. Datum) of SENECA LAKE AT GENEVA, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	446.27	446.13	445.40	445.20	445.67	445.30	447.12	447.50	447.32
2.....	446.31	446.08	445.37	445.40	445.66	445.27	447.30	447.46	447.30
3.....	446.31	446.03	445.34	445.60	445.64	445.24	447.38	447.43	447.40
4.....	446.30	445.98	445.32	445.68	445.63	445.21	447.36	447.40	447.40
5.....	446.33	445.95	445.30	445.73	445.62	445.20	447.38	447.37	447.41
6.....	446.33	445.92	445.29	445.85	445.62	445.19	447.29	447.34	447.40
7.....	446.32	445.88	445.27	445.88	445.61	445.21	447.28	447.30	447.39
8.....	446.32	445.89	445.24	445.88	445.61	445.21	447.27	447.27	447.38
9.....	446.30	445.80	445.22	445.87	445.62	445.20	447.27	447.24	447.37
10.....	446.28	445.76	445.20	445.87	445.59	445.20	447.27	447.20	447.36
11.....	446.26	445.72	445.18	445.86	445.55	445.19	447.25	447.16	447.40
12.....	446.24	445.68	445.15	445.87	445.51	445.19	447.24	447.12	447.42
13.....	446.23	445.64	445.13	446.00	445.50	445.18	447.22	447.08	447.40
14.....	446.22	445.61	445.10	445.95	445.49	445.17	447.30	447.06	447.38
15.....	446.35	445.69	445.08	445.87	445.48	445.16	447.30	447.06	447.35
16.....	446.35	445.69	445.05	445.75	445.46	445.14	447.28	447.06	447.40
17.....	446.34	445.63	445.10	445.73	445.43	445.13	447.24	447.40	447.58
18.....	446.33	445.62	445.14	445.71	445.39	445.12	447.22	447.45	447.62
19.....	446.41	445.64	445.14	445.71	445.34	445.10	447.20	447.45	447.65
20.....	446.42	445.66	445.14	445.71	445.34	445.09	447.18	447.45	447.67
21.....	446.40	445.68	445.13	445.70	445.38	445.08	447.22	447.44	447.67
22.....	446.38	445.70	445.12	445.70	445.38	445.07	447.30	447.43	447.65
23.....	446.36	445.68	445.12	445.71	445.38	445.06	447.40	447.54	447.62
24.....	446.33	445.64	445.11	445.74	445.38	445.05	447.45	447.54	447.59
25.....	446.31	445.60	445.10	445.77	445.37	445.05	447.47	447.53	447.56
26.....	446.29	445.56	445.09	445.76	445.37	445.10	447.48	447.52	447.52
27.....	446.27	445.51	445.08	445.74	445.36	445.20	447.56	447.51	447.46
28.....	446.25	445.48	445.08	445.71	445.34	445.75	447.59	447.49	a
29.....	446.22	445.48	445.09	445.68	445.32	446.18	447.57	447.47	a
30.....	446.20	445.44	445.11	445.68	.....	446.50	447.54	447.43	a
31.....	446.18	.....	445.11	445.68	.....	446.90	.....	447.39	.....

a No record; gage destroyed.

## CAYUGA LAKE

## DESCRIPTION

Cayuga lake, the second in size of the finger lakes in central New York, has a length of about thirty-seven and a half miles, and a width varying from one to three miles, and lies generally in a north and south direction. It has the usual abruptly rising shores and the alluvial fan at its head or south end. The territory draining directly into this lake, exclusive of Seneca lake, has an area of 863.57 square miles, of which 66.31 square miles, or 7.7 per cent, is water-surface. The total drainage above the outlet of Cayuga lake including Keuka and Seneca lakes is 1,571.66 square miles, of which the total water-surface of the three lakes amounts to 150.98 square miles or 9.6 per cent.

The southeast portion of this watershed, drained by Fall creek, lies south and east of a large portion of the Owasco lake drainage basin and extends almost to the southern end of Skaneateles lake.

Seneca river enters the foot of Cayuga lake from the west and leaves it near the east side at the new controlling works, about 2 miles north of Cayuga, built in connection with the Barge canal. These works consist of 6 Taintor gates each having a clear span of 30 feet.

Proposed water-surface elevations for this lake as used in the canalization work referred to Barge canal datum, are as follows: Average high water, Elev. 384.0; canal pool or low navigable stage, Elev. 381.5; average low water, Elev. 380.0. By average surface is meant the water-surface unaffected by wind.

Records of water-surface fluctuations in this lake in addition to those previously published in various reports of the Department of State Engineer, of gages maintained at Ithaca, Cayuga and Mud lock, are those of Professor C. L. Crandall of Cornell University, Ithaca, which consist of observations at varying intervals, beginning January, 1879.



## CAYUGA LAKE AT ITHACA

This station was established August 6, 1905, and maintained by the United States Geological Survey until 1909. During the year 1909 it was taken over by this Department.

The original gage was on the breakwater at the head of Cayuga lake and about 150 feet from the lighthouse. The gage was moved about November 1, 1912, to Smith's boat-house opposite the Cornell boat-house about a mile up the inlet and remained at this place until December 19, 1914, when it was abandoned. It was reestablished January 23, 1915, at its present location on the crib dock at Willow Point on the east shore of the lake about three-quarters of a mile north from the head of the lake. This gage, a direct-reading staff, is read once daily — at 8 A. M.

Daily elevation of water-surface (B. C. Datum) of CAYUGA LAKE AT WILLOW POINT NEAR ITHACA, for the nine months ending June 30, 1916. William H. Lane, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	383.8	384.9	384.0	383.55	384.6	383.55	385.5	384.5	384.7
2.....	383.9	384.9	384.0	383.7	384.6	383.5	386.2	384.5	384.6
3.....	384.0	384.9	383.95	383.9	384.6	383.5	386.5	384.5	384.6
4.....	384.1	384.85	383.9	384.1	384.55	383.5	386.6	384.5	384.8
5.....	384.2	384.8	383.9	384.3	384.5	383.45	386.6	384.45	384.9
6.....	384.3	384.75	383.85	384.4	384.5	383.4	386.55	384.4	384.9
7.....	384.3	384.7	383.8	384.5	384.45	383.4	386.45	384.35	384.9
8.....	384.4	384.7	383.8	384.6	384.4	383.4	386.35	384.3	384.85
9.....	384.5	384.6	383.75	384.6	384.35	383.35	386.2	384.3	384.85
10.....	384.5	384.6	383.7	384.55	384.3	383.3	386.1	384.25	384.8
11.....	384.5	384.5	383.7	384.5	384.3	383.3	385.9	384.2	384.8
12.....	384.5	384.5	383.65	384.5	384.25	383.25	385.8	384.3	384.75
13.....	384.5	384.4	383.6	384.45	384.2	383.2	385.65	384.3	384.7
14.....	384.55	384.4	383.6	384.4	384.2	383.2	385.6	384.4	384.7
15.....	384.7	384.4	383.5	384.35	384.15	383.1	385.6	384.4	384.65
16.....	384.85	384.35	383.45	384.3	384.1	383.0	385.4	384.5	384.7
17.....	384.9	384.3	383.4	384.3	384.0	382.95	385.25	384.9	384.8
18.....	384.95	384.3	383.3	384.3	383.9	382.9	385.1	385.0	384.9
19.....	385.0	384.25	383.3	384.25	383.9	382.85	385.0	385.15	385.0
20.....	385.1	384.3	383.35	384.25	383.8	382.8	384.9	385.2	385.0
21.....	385.15	384.3	384.4	384.2	383.75	382.75	384.8	385.2	385.1
22.....	385.2	384.3	383.35	384.2	383.7	382.7	384.75	385.1	385.1
23.....	385.3	384.25	383.3	384.25	383.65	382.6	384.8	385.2	385.15
24.....	385.25	384.2	383.25	384.3	383.6	382.5	384.85	385.2	385.15
25.....	385.2	384.2	383.2	384.3	383.6	382.45	384.8	385.15	385.15
26.....	385.15	384.15	383.2	384.35	383.55	382.42	484.75	385.1	385.2
27.....	385.1	384.1	383.3	384.4	383.6	382.45	384.8	385.0	385.2
28.....	385.1	384.1	383.35	384.45	383.6	382.65	384.8	385.0	385.2
29.....	385.0	384.1	383.4	384.5	383.6	383.4	384.7	384.9	385.15
30.....	385.0	384.0	383.5	384.5	.....	384.0	384.6	384.8	385.15
31.....	384.95	.....	383.5	384.55	.....	384.85	.....	384.75	.....

## CAYUGA LAKE AT CAYUGA

This station is located at the village of Cayuga near the foot of Cayuga lake on the east shore. The station was established October 10, 1905, and was originally located near the crossing of the old Cayuga and Seneca canal and the Seneca river. It was moved to its present location May 16, 1914.

The present gage is a direct-reading staff located on a pile opposite the N. Y. C. station, and is read twice daily — at 7 A. M. and 5 P. M.— to the nearest tenth foot.

Daily elevation of water-surface (B. C. Datum) of CAYUGA LAKE AT CAYUGA, for the nine months ending June 30, 1916. T. Reagan, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1	383.7	384.7	383.8	383.5	384.25	383.3	385.9	384.3	384.5
2	383.8	384.75	383.8	383.65	384.35	383.4	386.15	384.25	384.55
3	383.85	384.65	383.8	383.9	384.5	383.4	386.3	384.3	384.65
4	383.9	384.7	383.75	384.1	384.5	383.3	386.2	384.3	384.7
5	384.05	384.6	383.7	384.25	384.5	383.25	386.3	384.3	384.7
6	384.05	384.6	383.6	384.35	384.5	383.2	386.2	384.2	384.7
7	384.25	384.6	383.5	384.45	384.5	383.2	386.15	384.1	384.7
8	384.3	384.6	383.55	384.5	384.5	383.25	386.0	384.05	384.7
9	384.3	384.45	383.4	384.5	384.5	383.2	385.9	383.95	384.7
10	384.3	384.4	383.3	384.6	384.5	383.2	385.8	384.0	384.7
11	384.4	384.4	383.4	384.4	384.5	383.2	385.55	384.0	384.7
12	384.4	384.3	383.35	384.5	384.5	383.15	385.35	384.0	384.6
13	384.35	384.3	383.25	384.4	384.4	383.0	385.3	384.1	384.6
14	384.4	384.3	383.15	384.3	384.35	383.0	385.3	384.2	384.6
15	384.55	384.25	383.1	384.4	384.3	382.9	385.2	384.3	384.7
16	384.7	384.25	383.0	384.3	384.3	382.9	385.2	384.4	384.65
17	384.75	384.25	383.2	384.3	384.35	382.8	385.1	384.55	384.75
18	384.8	384.15	383.2	384.2	384.3	382.8	384.95	384.75	384.75
19	384.95	384.2	383.15	384.2	384.3	382.7	384.8	384.95	384.8
20	385.05	382.2	383.15	384.2	384.4	382.6	384.8	385.0	384.85
21	385.05	384.2	383.15	384.35	384.25	382.6	384.8	385.05	384.95
22	385.0	384.2	383.2	384.35	384.3	382.5	384.8	385.0	384.95
23	384.9	384.2	383.25	384.2	384.25	382.5	384.7	385.15	384.95
24	385.0	384.1	383.1	384.25	384.2	382.5	384.65	385.1	385.0
25	385.0	384.1	383.25	384.3	384.25	382.4	384.65	385.05	385.0
26	384.95	384.1	383.05	384.25	384.25	382.4	384.7	385.0	385.0
27	384.95	384.1	383.3	384.3	383.5	382.4	384.7	384.9	385.0
28	384.85	384.0	383.3	384.25	383.4	382.4	384.7	384.8	385.0
29	384.8	383.95	383.3	384.3	383.35	383.4	384.6	384.7	385.05
30	384.7	383.8	383.4	384.25	.....	384.1	384.45	384.6	385.05
31	384.75	.....	383.45	384.3	.....	385.0	.....	384.5	.....

## CLYDE RIVER

## DESCRIPTION

Clyde river joins Seneca river in the Montezuma marsh near the foot of Cayuga lake. Clyde river is formed by the junction of Canandaigua outlet and Ganargua creek, at Lyons. Its total length is about 20 miles and the greater portion of its course lies through a broad, marshy valley.

It is canalized throughout for the Barge canal and formed into three navigable pools having low navigable water-surfaces referred to Barge canal datum as follows:

Above its confluence with the Seneca river by a dam at Baldwinsville on the latter stream, Elev. 374.0; above the movable dam at Mays Point, Elev. 380.0; and above dam at Barge canal lock No. 26, about two and three-tenths miles downstream from Clyde, Elev. 386.0.

### CLYDE RIVER AT LYONS

This station located in the village of Lyons was established September 27, 1905. A standard chain gage is attached to the downstream side of the Geneva street bridge. During the years 1907 to 1910, inclusive, discharge was obtained at the station, but at present it is maintained for water-surface elevations only. The gage is read once daily — at 1 P. M.

Daily elevation of water-surface (B. C. Datum) of CLYDE RIVER AT GENEVA ST., LYONS, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	390.4	391.1	391.6	394.0	392.6	390.8	402.3	393.6	392.0
2.....	390.8	391.1	391.8	398.0	392.5	390.8	401.4	393.3	391.7
3.....	390.9	391.1	392.0	398.6	392.4	390.7	400.1	392.95	394.4
4.....	390.9	391.0	392.2	398.0	392.4	390.7	399.1	393.0	397.7
5.....	390.9	391.0	392.0	396.7	391.6	390.8	398.0	392.8	396.6
6.....	391.3	391.0	391.7	398.2	391.2	390.9	397.0	392.6	395.3
7.....	391.5	391.0	391.2	396.7	391.0	391.0	396.5	392.3	394.0
8.....	391.5	391.1	391.0	394.6	390.6	391.2	395.7	392.2	393.1
9.....	391.3	391.1	391.0	393.8	390.7	391.2	395.5	392.2	394.3
10.....	391.3	391.1	390.9	392.6	390.8	391.1	395.5	392.0	396.0
11.....	391.2	391.1	390.9	392.5	390.7	391.1	395.1	391.9	394.3
12.....	391.0	391.1	390.9	392.4	390.6	391.2	394.9	391.7	396.1
13.....	390.8	391.1	390.8	393.4	390.6	391.2	394.4	391.5	395.0
14.....	391.1	391.1	390.8	392.4	390.6	391.2	394.1	391.4	393.8
15.....	391.4	391.2	390.8	392.3	390.6	391.3	394.7	391.6	392.7
16.....	391.5	391.2	390.8	392.2	390.7	391.3	395.0	392.1	394.1
17.....	391.4	391.3	390.8	392.0	390.8	391.3	394.9	398.4	397.2
18.....	391.4	391.3	390.8	391.9	390.7	391.4	394.5	400.6	400.0
19.....	391.5	391.8	391.8	391.8	390.7	391.4	393.9	398.3	399.8
20.....	391.6	392.0	391.1	391.6	390.7	391.3	393.5	396.2	398.2
21.....	391.6	392.0	391.3	391.5	390.7	391.3	393.9	395.1	397.3
22.....	391.7	391.9	391.6	392.7	390.7	391.3	396.3	394.4	396.4
23.....	391.4	391.9	391.6	392.8	390.7	391.3	398.3	396.1	395.4
24.....	391.4	391.8	391.6	392.9	390.7	391.3	398.0	396.8	394.0
25.....	391.3	391.6	391.9	393.0	390.7	391.3	397.0	395.5	396.4
26.....	391.3	391.5	392.3	393.0	390.7	393.2	396.2	394.0	397.4
27.....	391.2	391.5	392.7	392.9	390.6	398.0	395.7	393.2	396.0
28.....	391.1	391.5	392.5	392.8	390.6	403.1	394.6	398.0	395.3
29.....	391.1	391.6	392.2	392.7	390.7	404.0	394.1	392.8	393.3
30.....	391.1	391.6	391.9	392.7	.....	404.4	393.8	392.4	393.5
31.....	391.1	.....	391.6	392.7	.....	403.6	.....	392.5	.....

NOTE.—March 27, at 10 A. M., Elev. 397.3; 1 P. M., Elev. 398.4; 5 P. M., Elev. 399.4; 10 P. M., Elev. 400.3

## CLYDE RIVER AT CLYDE

This station located in the village of Clyde was established October 20, 1905, as a discharge station, but owing to Barge canal construction, has been maintained for water-surface elevations only, since 1909. A standard chain gage is secured to the downstream side of the Sodus street bridge and is read twice daily — during October and up to November 21, at 7:30 A. M. and between 5 and 6 P. M.; from November 22 to March 26, at 7:30 A. M. and 4:30 P. M.; during April, May and June, at 7 A. M. and 6 P. M.— to nearest tenth foot.

Daily elevation of water-surface (B. C. Datum) of CLYDE RIVER AT CLYDE, for the nine months ending June 30, 1916. Byron H. Perry, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	380.6	381.3	381.45	381.8	382.4	381.4	393.4	384.5	383.3
2.....	380.8	381.2	382.0	382.65	382.4	381.4	392.65	383.9	383.05
3.....	381.25	381.2	382.8	385.75	381.85	381.4	391.65	383.6	383.9
4.....	381.2	381.2	382.6	386.4	381.6	381.4	390.4	383.55	385.55
5.....	381.45	381.2	382.05	386.9	381.4	381.4	389.4	383.4	386.1
6.....	382.35	381.2	381.6	386.9	381.4	381.4	388.25	383.25	385.55
7.....	382.1	381.2	381.65	386.8	381.4	381.4	387.4	383.2	385.1
8.....	381.7	381.3	381.2	386.3	381.4	381.4	387.0	382.9	384.5
9.....	381.7	381.3	381.1	386.3	381.4	381.4	386.6	382.5	384.1
10.....	381.4	381.3	381.1	385.35	381.4	381.4	386.35	382.15	384.65
11.....	381.5	381.3	381.1	384.65	381.4	381.4	386.05	381.9	384.8
12.....	381.5	381.3	381.1	384.35	381.4	381.4	385.9	381.7	384.9
13.....	381.3	381.3	380.75	384.25	381.4	381.9	385.75	381.6	385.0
14.....	381.2	381.3	380.7	384.2	381.4	382.9	385.55	381.6	384.55
15.....	381.2	381.3	380.7	384.05	381.4	383.25	385.4	381.75	383.95
16.....	381.6	381.35	380.8	384.9	381.4	383.3	385.4	382.1	384.05
17.....	381.6	381.4	380.95	383.7	381.4	383.3	385.2	385.15	384.9
18.....	381.55	381.45	381.25	383.4	381.4	383.3	385.05	388.5	387.8
19.....	381.5	381.65	381.9	383.4	381.4	383.3	384.9	388.8	388.7
20.....	381.95	381.7	381.25	383.2	381.6	383.3	384.65	387.45	388.5
21.....	382.0	381.95	381.2	382.5	381.6	382.6	384.7	387.1	387.75
22.....	381.85	382.15	381.95	382.4	381.6	382.6	385.15	385.35	386.9
23.....	381.5	382.1	381.8	383.7	381.6	382.6	386.55	385.35	386.15
24.....	381.5	382.1	381.9	383.2	381.4	382.6	387.2	386.0	385.3
25.....	381.5	381.8	382.6	382.7	381.4	382.6	386.9	385.9	385.5
26.....	381.5	381.65	382.3	382.7	381.4	382.85	386.1	385.3	386.2
27.....	381.4	381.6	383.4	382.7	381.4	383.45	385.8	384.7	386.15
28.....	381.3	381.5	382.9	382.6	381.4	385.15	385.35	384.35	385.75
29.....	381.3	381.4	381.9	382.6	381.4	390.4	385.05	384.05	384.9
30.....	381.3	381.3	381.9	382.6	.....	393.0	385.75	383.9	384.2
31.....	381.3	.....	381.8	382.5	.....	393.9	.....	383.7	.....

## GANARGUA CREEK

## DESCRIPTION

Ganargua creek proper, often called Mud creek, rises near Victor. Its course is northeasterly to Macedon, then easterly. The tributary drainage is of the characteristic glacial kame type and the tributaries are rather sparse, flowing oftentimes first north

and then south between elongated hills, until they find their way to Ganargua creek. The principal tributary of Ganargua creek is Mud creek, which rises in the hilly region near the head of Canandaigua lake and flows northward about 20 miles, entering Ganargua creek at Victor.

Ganargua creek approaching from the south has been incorporated in the Barge canal from about the western limits of the town of Palmyra eastward for about two and three-quarter miles to a spillway 360 feet long, 160 feet of which is at canal pool Elev. 430.0 and the remainder one foot higher, over which it passes to the north towards Harrison's Mill. About 1.2 miles east of where the creek enters the canal there is a 5 ft. x 7 ft. gate to supply water to Barnhart's mill and from below this mill to the spillway, portions of the original creek channel have been straightened. Ganargua creek reenters the Barge canal just west of the village of Lyons and above the dam at lock No. 27, immediately above its confluence with Canandaigua outlet forming the Clyde river.

#### GANARGUA CREEK NEAR PALMYRA

This station established March 25, 1907, is located at Harrison's Mill about  $2\frac{1}{2}$  miles east of Palmyra.

The staff gage is fastened to the screen-rack frame and is maintained for water-surface elevations only. The gage is read once daily—at 1:00 P. M.—to half-tenths. The odd hundredths appearing in the table are due to the datum of the gage.

Daily elevation of water-surface (B. C. Datum) of GANARGUA CREEK NEAR PALMYRA, for the nine months ending June 30, 1916. L. H. Harrison, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	422.28	422.43	422.93	422.43	422.73	422.18	425.73	422.53	422.33
2.....	422.33	422.43	423.93	422.68	422.53	422.13	425.18	422.43	422.48
3.....	422.53	422.48	423.48	425.78	422.38	422.23	424.23	422.53	425.18
4.....	422.43	422.48	423.03	423.73	423.08	422.18	423.83	422.48	424.73
5.....	423.03	422.53	422.38	423.48	422.33	422.18	423.23	422.48	423.43
6.....	422.93	422.43	422.38	424.18	422.18	422.23	423.03	422.38	423.18
7.....	422.53	422.48	422.33	423.73	422.28	422.33	422.83	422.43	422.88
8.....	422.53	422.43	422.33	423.33	422.33	422.33	422.48	422.33	422.83
9.....	422.63	422.38	422.28	422.83	422.53	422.43	422.43	422.23	425.13
10.....	422.68	422.43	422.33	422.43	422.53	422.53	422.43	422.18	423.43
11.....	422.73	422.43	422.28	422.43	422.43	422.53	422.38	422.13	423.13
12.....	422.68	422.33	422.28	422.78	422.33	422.48	422.38	422.03	423.33
13.....	422.53	422.38	422.28	423.03	422.33	422.53	422.23	421.98	423.03
14.....	422.53	422.38	422.33	422.78	422.23	422.63	422.43	422.00	422.83
15.....	422.78	422.38	422.28	422.63	422.18	422.58	422.53	422.13	422.88

Daily elevation of water-surface (B. C. Datum) of GANARGUA CREEK NEAR PALMYRA,  
for the nine months ending June 30, 1916 — *Continued*

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
16.....	422.73	422.33	422.33	422.53	422.13	422.43	423.03	422.33	423.13
17.....	422.68	422.43	422.33	422.53	422.18	422.38	422.93	428.68	427.58
18.....	422.73	422.48	422.38	422.58	422.23	422.43	422.83	426.13	425.23
19.....	422.78	422.53	422.33	422.63	422.18	422.48	422.68	423.63	423.08
20.....	422.73	422.58	422.43	422.53	422.13	422.53	422.63	423.38	422.93
21.....	422.73	422.58	422.38	422.48	422.18	422.48	423.73	423.33	422.73
22.....	422.53	422.48	422.33	422.93	422.18	422.38	423.43	423.03	423.83
23.....	422.48	422.38	422.38	422.83	422.13	422.48	424.38	424.03	422.38
24.....	422.43	422.33	422.38	422.78	422.18	422.53	423.53	423.38	422.53
25.....	422.48	422.38	422.53	422.73	422.23	423.93	423.53	423.13	424.93
26.....	422.43	422.38	423.03	422.68	422.23	422.98	423.48	422.78	423.48
27.....	422.38	422.28	422.78	422.73	422.18	422.98	422.28	422.53	422.93
28.....	422.43	422.28	422.78	422.93	422.13	427.53	422.23	422.58	423.73
29.....	422.48	422.23	422.73	422.58	422.23	427.75	422.63	422.53	422.43
30.....	422.43	423.03	422.38	422.53	.....	426.48	422.63	422.48	423.23
31.....	422.43	.....	422.43	422.58	.....	426.03	.....	422.48	.....

## CANANDAIGUA OUTLET

### DESCRIPTION

Canandaigua lake occupies one of the elongated depressions extending in nearly a north and south direction in the central lake region of New York. The drainage tributary to the lake is chiefly short lateral streams from the steep slopes of adjacent hill-sides. The outflow from the lake is regulated to some extent by gates. The lake is at elevation about 686. From the foot of the lake at Canandaigua the outlet flows northward to Manchester, a distance of 7 miles. In this distance a fall of 100 feet occurs, which is chiefly concentrated at several water-power dams. From Manchester the stream flows easterly 12 miles and thence north-easterly 8 miles, joining Ganargua creek at Lyons to form the Clyde river. In the easterly portion of its course the stream winds with large bends through a broad sloping valley of fertile land. The fall is mostly utilized at water-power dams. The tributary drainage is moderately rolling and is interspersed with glacial kames. These are lenticular hills extending usually in a north and south direction. At Phelps, Flint creek, which is the largest tributary, enters the outlet. Flint creek drains a valley similar to the adjacent lake basins. This valley is not at present occupied by a lake, but contains an extensive swamp, reaching several miles southward from Gorham.

## CANANDAIGUA OUTLET AT ALLOWAY

**Location.**—At a highway bridge crossing the stream in the village of Alloway about 2½ miles upstream or south of Lyons.

**Records available.**—September 18, 1906, to June 30, 1916.

**Drainage area.**—440 square miles. (United States Geological Survey topographic maps.)

**Gage.**—Vertical staff consisting of enameled steel face, with brass foot numbers reading from 0 to 10 feet, on lower wing of left-hand abutment, is read twice daily—about 8:30 A. M. and 4 P. M.—to nearest two-tenths.

**Control.**—Except during low stages the control at this station is Slaters dam located about two miles below the bridge, together with the slope upstream. Sluice-gates at the dam are kept open always, water passing over the crest only during extremely high flows.

**Discharge measurements.**—Current-meter measurements made from the highway bridge which has a span of 95 feet.

**Extremes of discharge.**—Current year: Maximum stage recorded, Elev. 412.5 on March 29, at 8:30 A. M.; discharge, 3,870 second-feet. Minimum stage recorded, Elev. 404.1, on October 1 to 3; discharge, 108 second-feet.

1906–1916: Maximum stage recorded, March 29, 1916, at 8:30 A. M., Elev. 412.5; discharge, 3,870 second-feet. Minimum stage recorded, September 15, 1913; discharge, 26 second-feet.

**Accuracy.**—Discharge rating curve fairly well defined for flows below 1,000 second-feet. Higher flows estimated.

**Regulation.**—Daily flow materially affected by operation of grist-mill a quarter mile above station.

Daily elevation of water-surface (B. C. Datum) of CANANDAIGUA OUTLET AT ALLOWAY, for the nine months ending June 30, 1916. Carl Tuschler, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	404.1	404.3	404.5	406.1	406.2	405.8	411.0	407.1	406.1
2.....	404.1	404.3	404.4	406.7	406.0	405.7	410.6	407.1	406.0
3.....	404.2	404.3	404.3	409.3	405.8	405.7	409.8	407.0	406.7
4.....	404.4	404.3	404.3	408.1	405.7	405.7	409.4	406.9	408.5
5.....	404.9	404.3	404.3	407.1	405.7	407.7	408.9	406.8	407.1
6.....	405.3	404.3	404.5	408.9	405.5	405.7	408.5	406.6	406.8
7.....	405.2	404.3	404.5	407.2	405.5	405.5	408.1	406.5	406.3
8.....	405.0	404.3	404.5	406.5	405.7	405.6	408.0	406.5	406.3
9.....	404.9	404.3	404.5	406.2	405.3	405.6	407.9	406.5	407.1
10.....	404.9	404.3	404.5	406.3	405.7	405.6	407.8	406.2	406.0
11.....	404.8	404.3	404.5	406.2	405.3	405.7	407.5	406.1	406.6
12.....	404.7	404.3	404.5	406.1	405.3	405.9	407.5	406.1	407.9
13.....	404.8	404.3	404.5	406.4	405.3	405.9	407.4	406.0	407.0
14.....	404.9	404.3	404.7	406.3	405.3	405.9	407.7	405.9	406.6
15.....	404.9	404.3	404.8	406.2	405.3	405.9	407.9	405.9	406.3

Daily elevation of water-surface (B. C. Datum) of CANANDAIGUA OUTLET AT ALLOWAY, for the nine months ending June 30, 1916 — *Continued*

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
16.....	404.7	404.3	404.9	405.9	405.3	406.0	407.9	406.1	407.0
17.....	404.7	404.3	404.9	405.7	405.3	406.1	407.9	410.2	409.8
18.....	404.7	404.4	405.2	405.7	405.3	406.3	407.7	409.7	409.7
19.....	405.0	404.5	405.3	405.7	405.4	406.2	407.1	408.9	408.7
20.....	405.1	404.5	405.2	405.7	405.5	406.3	407.1	408.0	409.2
21.....	405.0	404.5	405.1	405.8	405.4	406.3	407.0	407.6	408.6
22.....	404.8	404.5	405.1	405.7	405.3	406.2	409.3	407.1	408.3
23.....	404.7	404.5	405.1	405.7	405.3	406.1	409.5	408.7	407.7
24.....	404.7	404.5	405.3	405.7	405.1	406.1	408.9	408.8	407.3
25.....	404.6	404.5	405.7	405.7	405.2	406.2	408.7	408.0	408.6
26.....	404.5	404.5	406.1	405.7	405.3	406.5	408.2	407.2	403.6
27.....	404.5	404.5	406.1	405.8	405.4	407.4	407.9	406.7	407.0
28.....	404.5	404.5	406.1	406.0	405.6	411.0	407.7	406.5	406.9
29.....	404.4	404.5	406.1	406.2	405.8	412.2	407.6	406.5	406.5
30.....	404.3	404.5	406.1	405.9	.....	411.7	407.4	406.5	406.4
31.....	404.3	.....	406.1	406.0	.....	411.2	.....	406.4	.....

NOTE.—Discharge relation probably somewhat affected by ice from the middle of February to March 28.

Daily discharge, in second-feet, of CANANDAIGUA OUTLET AT ALLOWAY, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	108	144	192	712	748	602	2,990	1,090	712
2.....	108	144	166	934	676	566	2,770	1,090	676
3.....	124	144	144	2,090	602	566	2,340	1,050	934
4.....	166	144	144	1,520	566	566	2,140	1,006	1,710
5.....	306	144	144	1,090	566	566	1,900	970	1,090
6.....	430	144	192	1,900	496	566	1,710	898	970
7.....	400	144	192	1,130	496	496	1,520	862	786
8.....	338	144	192	862	566	532	1,480	862	786
9.....	306	144	192	748	430	532	1,430	862	1,090
10.....	306	144	192	786	566	532	1,390	748	676
11.....	276	144	192	748	430	566	1,260	712	898
12.....	248	144	192	712	430	638	1,260	712	1,430
13.....	276	144	192	824	430	638	1,210	676	1,050
14.....	306	144	248	786	430	638	1,340	638	898
15.....	306	144	276	748	430	638	1,430	638	786
16.....	248	144	306	638	430	676	1,430	712	1,050
17.....	248	144	306	566	430	712	1,430	2,550	2,340
18.....	248	166	400	566	430	786	1,340	2,290	2,290
19.....	338	192	430	566	464	748	1,090	1,900	1,800
20.....	370	192	400	566	496	786	1,090	1,480	2,040
21.....	338	192	370	602	464	786	1,050	1,300	1,750
22.....	276	192	370	566	430	748	2,090	1,090	1,610
23.....	248	192	370	566	430	712	2,190	1,800	1,840
24.....	248	192	430	566	370	712	1,900	1,850	1,170
25.....	220	192	566	566	400	748	1,800	1,480	1,750
26.....	192	192	712	566	430	862	1,570	1,130	1,750
27.....	192	192	712	602	464	1,210	1,430	934	1,050
28.....	192	192	712	676	532	2,990	1,340	862	1,006
29.....	166	192	712	748	602	3,680	1,300	862	862
30.....	144	192	712	638	.....	3,390	1,210	862	824
31.....	144	.....	712	676	.....	3,100	.....	824	.....
Mean....	252	164	357	815	491	1,009	1,611	1,121	1,237

NOTE.—Discharge relation probably somewhat affected by ice from the middle of February to March 28. Discharge during latter part of this period may be slightly too large.



Monthly discharge of CANANDAIGUA OUTLET AT ALLOWAY, for the nine months ending  
June 30, 1916

[Drainage area, 440 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF
	Maximum	Minimum	Mean	Per square mile	Depth in inches on drainage area
October . . . . .	430	108	252	0.573	0.66
November . . . . .	192	144	164	0.373	0.42
December . . . . .	712	144	357	0.811	0.94
January . . . . .	2,090	506	815	1.85	2.13
February . . . . .	748	370	491	1.12	1.21
March . . . . .	3,680	496	1,009	2.29	2.64
April . . . . .	2,990	1,050	1,611	3.66	4.06
May . . . . .	2,550	638	1,121	2.55	2.94
June . . . . .	2,340	676	1,237	2.81	3.14

## FLINT CREEK

### DESCRIPTION

Flint creek is a tributary to Canandaigua outlet, entering the outlet at Phelps. Flint creek rises in northern Steuben county near the junction of the Ontario, Yates and Steuben county lines. It flows in general northeasterly, having a total length of 35 miles. The drainage basin is relatively long and narrow and the stream valley above Gorham, about 14 miles from the mouth, comprises a deep narrow valley bordered by steep and in some cases precipitous slopes, the bottom of the valley being relatively flat and having an average width of about one mile. The elevation of the valley is about 880 feet above tide. This valley is intermediate between and nearly parallel with Keuka and Canandaigua lakes, and it is apparently an unoccupied lake bottom of the finger lake series. Between the villages of Potter and Gorham the bottom of the valley is occupied by an extensive marsh, having a length of about 8 miles and an average width of one mile. Flint creek enters the head of this marsh at Potter and leaves the marsh at Gorham. Short lateral tributaries enter the marsh from the steep side slopes. The marsh is largely timber covered. There is a water-power dam at Gorham, which controls the level of Flint creek at the outlet from the marsh. Power is developed for small mills at Orleans, Flint, Stanton and other places. Above the head of Gorham marsh the sides of the stream valley rise to a height of 800 to 1,000 feet above the stream. The valley slopes are generally round and not serrated, as in the case of most of the other

slopes bordering finger lake valleys, and there are but few permanent tributaries to upper Flint creek.

#### FLINT CREEK AT PHELPS

A gaging station was established on Flint creek at a private highway bridge located about one-quarter mile south of Phelps Junction, on August 5, 1910, by this Department. Readings are taken each morning and night from a standard weight-and-chain gage located on the downstream side of the bridge. The stream channel is fairly straight and uniform above and below the gage, but the bed of the stream is rock and contains some loose boulders, especially near the margins of the stream.

The datum of the gage is referred to an arbitrary bench-mark, elevation 100.00, on the downstream side of the right-hand abutment. The elevation of water-surface, when the gage reads zero, is 95.86.

Daily gage height, in feet, of FLINT CREEK AT PHELPS, for the nine months ending June 30, 1916. Edward Fitzgerald, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1	1.60	1.95	1.95	2.88	2.78	2.68	5.25	3.00	2.38
2	1.68	1.98	2.05	3.82	2.60	2.75	4.85	2.85	2.40
3	1.78	1.95	2.05	3.28	2.55	2.80	4.38	2.80	3.10
4	1.75	1.90	2.05	3.12	2.42	2.88	4.15	2.78	2.90
5	1.95	1.95	2.00	3.40	2.35	2.85	3.82	2.70	2.72
6	1.90	1.90	1.92	3.45	2.30	2.88	3.58	2.65	2.62
7	1.85	1.80	2.00	3.48	2.18	2.88	3.35	2.58	2.50
8	1.83	1.80	1.92	3.30	2.28	2.98	3.25	2.62	2.55
9	1.83	1.98	1.90	3.18	2.50	3.00	3.20	2.50	2.60
10	2.23	1.85	1.92	3.08	2.42	3.02	3.15	2.45	2.55
11	2.27	1.78	1.92	2.92	2.50	3.00	3.05	2.38	2.70
12	2.23	1.75	1.85	2.78	2.62	3.08	3.02	2.35	3.10
13	2.20	1.78	1.85	2.92	2.68	3.22	2.98	2.30	2.72
14	2.13	1.73	1.88	2.65	2.60	3.25	3.18	2.22	2.62
15	2.50	1.85	1.88	2.42	2.68	3.28	3.32	2.22	2.70
16	2.33	1.88	1.95	2.50	2.70	3.22	3.52	3.02	3.10
17	2.23	1.83	1.95	2.32	2.68	3.20	3.48	4.10	4.18
18	2.05	1.83	2.32	2.50	2.58	3.20	3.32	3.30	3.58
19	2.25	2.05	2.50	2.55	2.62	3.20	3.08	3.02	3.82
20	2.28	2.60	2.38	2.48	2.55	3.22	2.95	3.35	4.30
21	2.25	2.60	2.30	2.62	2.58	3.28	3.10	3.28	4.00
22	2.25	2.38	2.22	2.80	2.62	3.30	4.02	3.10	3.68
23	2.18	2.15	2.28	2.60	2.68	3.38	3.98	3.18	3.48
24	2.15	2.20	2.20	2.45	2.68	3.40	4.00	3.80	3.22
25	2.18	2.18	2.38	2.40	2.62	3.48	3.92	2.95	3.15
26	2.03	2.20	2.45	2.42	2.62	3.48	3.68	2.85	3.00
27	2.00	2.23	2.45	2.62	2.62	4.55	3.45	2.82	2.75
28	2.03	2.25	2.40	2.78	2.65	6.42	3.32	2.72	2.62
29	1.98	2.15	2.30	2.68	2.68	5.45	3.15	2.65	2.60
30	1.92	2.08	2.40	2.68	.....	5.70	3.05	2.52	2.40
31	1.98	.....	2.72	2.75	.....	5.28	.....	2.45	.....

## OWASCO OUTLET

## DESCRIPTION

Owasco lake is one of the finger lake group in central New York and is generally rated as the sixth in size. It is about 11 miles long and has a maximum width of 1.25 miles. It has a water-surface area of approximately 10.4\* square miles and is drained by Owasco outlet.

The lake extends in a north and south direction and lies wholly within the boundaries of Cayuga county. The southern half of the lake, on both the east and west sides, is flanked by steep, sloping hills, rising to elevations of 500 to 800 feet above the lake surface, which is at an elevation of 710 feet above tide-water. These hills are rather deeply indented by numerous small streams that enter the lake at almost right angles from either side. To the south of the head of the lake and extending for some 17 or 18 miles is a rather narrow valley, the floor of which is about one-half mile wide at the lake and narrows up as it approaches the southern extremity. This valley is drained by Owasco inlet, which rises near Freeville in Tompkins county.

The dividing line for the drainage basin is at an elevation of from 700 to 1,300 feet above sea-level on the west and attains an altitude of some 1,600 feet on the east. The western line falls about 2 miles back from the lake; the eastern divide extends some 7 or 8 miles. The general shape of the drainage basin is long and narrow, the northern end terminating on the shores of Seneca river, into which the waters drain.

Owasco lake occupies about the center of the drainage basin north and south. From the foot of the lake north the descent is very rapid, there being 325 feet fall in the 17 miles between the outlet and Seneca river. One hundred and ten feet of this fall is practically within the city limits of Auburn and is utilized by the numerous manufacturing interests in that city. From a point just above Troopsville to Port Byron, a distance of about 5 miles, there is a fall of 130 feet, very little of which is developed. A State dam about one mile below the outlet of the lake practically

\* Given incorrectly as 12.4 square miles in Report of State Engineer and Surveyor for 1914, Vol. II, page 153.

controls the low and medium flow of this drainage basin. At Port Byron there is a small diverting dam owned by the State for the purpose of supplying water to the Erie canal. The use, by the State, of this lake as a storage reservoir for the supply of the canal will be continued in the future for the regulation in part of the Seneca river which has been canalized for the Barge canal. The city of Auburn derives its water-supply from Owasco lake and diverts an average of about 6,500,000 gallons daily. The drainage area is representative of the farming district in central New York and is fairly well timbered.

#### OWASCO OUTLET NEAR AUBURN

**Location.**— On the farm of C. H. Pearce,  $3\frac{3}{4}$  miles below the State dam at the outlet of Owasco lake, 2 miles below the center of the city of Auburn, Cayuga county.

**Records available.**— November 17, 1912, to June 30, 1916.

**Drainage area.**— 206 square miles. (Measured on United States Geological Survey topographic maps.)

**Gage.**— Gurley printing water-stage recorder installed over a concrete well  $3\frac{1}{2}$  feet square and 6 feet deep (inside dimensions). Gage well is connected with the river by a 4-inch cast-iron pipe.

**Control.**— A low concrete control is situated a short distance below the gage. The crest of this control is 1 foot wide and the slopes of both upstream and downstream faces are 1 on 2. A small horizontal apron, built on a level with the bed of stream, extends downstream  $2\frac{1}{2}$  feet from toe of dam. The mean elevation of the left-hand end of the dam for a distance of 50 feet is gage height 1.28 feet; the remaining 50 feet of the crest of the dam is at gage height 2.12 feet.

**Discharge measurements.**— Made by wading directly opposite the gage in low water and from a cable and car at the same section in high water.

**Winter flow.**— Ice does not form to a sufficient extent to obstruct the control, except during extreme cold.

**Diversions.**— An average flow of about 10 second-feet is pumped from Owasco lake for the municipal water-supply of the city of Auburn; proportion returning to stream above the gaging station not known.

**Extremes of discharge.**— Current period: Maximum stage from water-stage recorder, 4.21 feet at 7:30 p. m., April 3; discharge, 2,050 second-feet. Minimum stage from water-stage recorder, 1.74 feet at 8:45 p. m., January 26; discharge, 51 second-feet.

1912-1916: Maximum stage, 4.6 feet during the period March 25 to 30, 1913, determined by leveling from flood-marks; discharge, 2,750 second-feet. Minimum stage from automatic gage record, 1.41 feet at 1 a. m., October 15, 1913; discharge, 5.6 second-feet.

**Coöperation.**— Established and maintained by the United States Geological Survey in coöperation with the State Conservation Commission.

Daily discharge, in second-feet, of OWASCO OUTLET NEAR AUBURN, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1	430	393	291	428	342	.....	1,530	690	483
2	510	370	292	542	387	.....	1,780	658	463
3	485	355	286	581	414	.....	1,820	593	469
4	475	362	279	619	331	.....	1,780	528	486
5	548	355	271	663	397	.....	1,690	508	522
6	575	337	266	.....	394	.....	1,600	488	507
7	579	331	273	.....	377	.....	1,510	461	499
8	592	337	266	.....	342	.....	1,380	404	491
9	587	322	248	.....	384	.....	1,250	320	487
10	555	311	241	.....	330	.....	1,070	323	452
11	540	250	236	.....	382	.....	926	310	404
12	516	258	237	690	371	.....	863	308	409
13	501	314	238	652	383	.....	827	270	404
14	481	273	238	648	462	.....	821	284	397
15	514	315	231	633	484	.....	826	244	396
16	500	307	231	595	391	.....	792	254	402
17	502	311	240	649	334	.....	772	494	398
18	493	310	273	632	327	.....	736	699	376
19	525	324	283	591	336	.....	708	740	432
20	538	323	293	519	344	.....	679	743	422
21	529	331	308	404	361	283	642	699	408
22	524	330	301	182	352	288	642	678	396
23	505	331	326	166	263	293	612	717	393
24	486	326	328	180	262	294	674	766	388
25	484	330	354	175	273	298	784	795	353
26	472	323	379	173	254	329	794	716	302
27	449	318	403	165	264	383	800	689	300
28	439	310	414	237	.....	479	816	649	290
29	423	308	422	314	.....	646	756	594	303
30	400	297	424	323	.....	875	687	566	297
31	389	.....	419	336	.....	1,190	.....	513	.....
Mean	502	322	300	493	350	355	1,020	537	411

NOTE.— Daily discharge is mean of 24 hourly discharge values for each day. Mean discharge for periods estimated as follows: January 6 to 11, inclusive, 700 second-feet; February 28 to March 10, inclusive, 290 second-feet; March 11 to 20, inclusive, 275 second-feet. These figures indicate the flow as regulated at the State dam and at mills in Auburn.

Monthly discharge of OWASCO OUTLET NEAR AUBURN, for the nine months ending  
June 30, 1916

[Drainage area, 206 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF	Accu- racy
	Maximum	Minimum	Mean	Per square mile	Depth in inches on drainage area	
October.....	592	a 389	502	2.44	2.81	A
November.....	393	250	322	1.56	1.74	A
December.....	424	231	300	1.46	1.63	A
January.....	.....	165	493	2.39	2.76	A
February.....	484	254	350	1.70	1.83	B
March.....	1,190	.....	355	1.72	1.98	C
April.....	1,820	a 612	1,020	4.95	5.52	A
May.....	795	a 234	537	2.61	3.01	A
June.....	522	290	411	2.00	2.23	A

a Sunday.

Discharge measurement of OWASCO OUTLET NEAR AUBURN, during the year ending  
June 30, 1916

DATE	Made by	Gage height	Discharge
April 24.....	C. C. Covert.....	Feet 3.08	Sec.-ft. 734

## ONONDAGA LAKE

### DESCRIPTION

Onondaga lake, situated north of the city of Syracuse, is about  $4\frac{1}{2}$  miles long, having an average width of one mile and a surface area of 4.7 square miles. The surface elevation is about 365, Barge canal datum and has an average annual range of nearly 6 feet.

The drainage area including the lake surface is about 288 square miles lying mostly to the south and southwest. Included in this area is Otisco lake with a water-surface of 3.3 square miles discharging through Nine-Mile creek and a group of small lakes drained by Onondaga creek. Besides these principal tributaries there are a few small streams entering the lake from the north and east.

Onondaga lake discharges into the Seneca river through Onondaga outlet which is canalized as a part of the Barge canal system. A low navigable stage at elevation 363.0 will be maintained on this lake by the dam on the Oswego river at Phoenix.

#### ONONDAGA LAKE AT SYRACUSE

This station is located at the head or south end on Onondaga lake at the mouth of Onondaga creek. The water-surface elevations are at present obtained by measuring down from a reference point on the south abutment of the New York Central Railroad bridge. This station was established May 14, 1904, and is maintained for water-surface elevations only. Readings are made once daily—at about 8 A. M.—to inches.

Daily elevation of water-surface (B. C. Datum) of ONONDAGA LAKE AT SYRACUSE for the nine months ending June 30, 1916. Chas. Bourke, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1	364.03	364.20	364.28	364.95	365.20	364.86	369.03	366.45	365.53
2	364.20	364.20	364.28	365.28	365.11	364.86	370.28	366.36	365.28
3	364.36	364.28	364.28	365.86	365.11	364.95	370.61	366.28	365.28
4	364.28	364.28	364.28	366.11	365.11	364.95	370.74	365.95	365.36
5	364.45	364.28	364.28	366.11	365.11	364.95	370.74	365.78	365.36
6	364.53	364.28	364.28	366.78	365.03	365.03	370.70	365.61	365.45
7	364.53	364.28	364.28	366.86	365.03	365.03	370.70	365.45	365.45
8	364.53	364.28	364.28	366.78	365.03	364.95	370.36	365.28	365.45
9	364.45	364.20	364.28	366.70	365.11	364.95	369.95	365.11	365.36
10	364.45	364.20	364.20	366.45	365.11	364.86	369.78	364.95	365.28
11	364.36	364.20	364.20	366.28	365.11	364.86	369.53	364.78	365.28
12	364.36	364.20	364.20	365.95	365.11	364.86	369.28	364.61	365.20
13	364.28	364.20	364.20	365.78	365.11	365.03	369.03	364.45	365.20
14	364.28	364.28	364.20	365.61	365.03	365.11	368.78	364.28	365.20
15	364.36	364.20	364.20	365.36	365.03	365.11	368.53	364.20	365.11
16	364.28	364.20	364.28	365.20	364.95	365.20	368.36	364.11	365.28
17	364.28	364.28	364.36	365.03	364.86	365.20	368.11	364.45	365.45
18	364.28	364.28	364.53	364.95	364.86	365.20	367.95	364.78	365.45
19	364.61	364.36	364.61	364.95	364.86	365.20	367.78	366.03	366.36
20	364.61	364.53	364.61	365.03	364.86	365.20	367.53	366.03	365.43
21	364.61	364.61	364.53	365.28	364.86	365.11	367.20	366.45	365.61
22	364.53	364.53	364.45	365.45	364.86	365.03	366.95	366.53	365.78
23	364.53	364.53	364.45	365.45	364.78	364.95	367.03	366.53	365.78
24	364.45	364.53	364.45	365.28	364.78	364.86	367.03	366.53	365.70
25	364.36	364.53	364.53	365.11	364.86	364.78	366.95	366.53	365.61
26	364.28	364.45	365.03	365.03	364.86	364.78	366.86	366.45	365.53
27	364.28	364.45	365.28	365.03	364.86	364.78	366.78	366.20	365.45
28	364.28	364.36	365.28	365.28	364.86	364.86	366.70	366.11	365.36
29	364.20	364.28	365.20	365.28	364.78	365.43	366.61	365.95	365.20
30	364.28	364.28	365.03	365.20	.....	366.45	366.53	365.78	365.11
31	364.20	.....	364.78	365.20	.....	367.70	.....	365.78	.....

## ONONDAGA OUTLET AT LONG BRANCH

This station is located at the outlet of Onondaga lake at Long Branch.

The staff gage is secured to a willow tree on the right-hand or east bank of the stream about 300 feet above the highway bridge over the outlet at Long Branch and is maintained for water-surface elevations only. It is read once daily — at 8 A. M.— and indicates water-surface of Onondaga lake.

Daily elevation of water-surface (B. C. Datum) of ONONDAGA OUTLET NEAR LONG BRANCH, LIVERPOOL P. O., for the nine months ending June 30, 1916. Mark Kennedy, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1	364.2	365.1	364.2	364.8	365.2	365.2	369.4	366.5	365.6
2	364.3	365.1	364.2	365.4	365.2	365.2	369.8	366.4	365.5
3	364.3	365.0	364.2	366.0	365.2	365.2	370.0	366.3	365.5
4	364.3	365.0	364.2	366.2	365.2	365.2	370.2	366.3	365.4
5	364.3	365.0	364.2	366.4	365.2	365.2	370.1	366.1	365.3
6	364.3	365.0	364.2	367.0	365.3	365.1	369.7	366.1	365.3
7	364.2	364.9	364.2	366.9	365.3	365.1	369.5	366.1	365.2
8	364.2	364.9	364.2	366.8	365.3	365.1	369.3	366.2	365.3
9	364.2	364.9	364.2	366.8	365.4	365.1	369.1	366.2	365.3
10	364.2	364.8	364.2	366.7	365.4	365.2	368.8	366.3	365.4
11	364.3	364.8	364.2	366.6	365.4	365.2	368.6	366.5	365.4
12	364.3	364.8	364.3	366.5	365.4	365.2	368.4	366.7	365.5
13	364.3	364.7	364.4	366.4	365.4	365.2	368.0	366.7	365.5
14	364.2	364.7	364.5	366.3	365.3	365.3	367.8	366.7	365.6
15	364.2	364.6	364.6	366.2	365.3	365.3	367.6	366.6	365.5
16	364.2	364.6	364.6	366.2	365.3	365.3	367.4	366.5	365.5
17	364.2	364.5	364.6	366.1	365.3	365.3	367.2	366.4	365.4
18	364.2	364.5	364.6	366.0	365.2	365.3	367.1	366.3	365.4
19	364.2	364.5	364.6	365.8	365.2	365.3	367.0	366.2	365.3
20	364.3	364.4	364.5	365.7	365.2	365.4	366.8	366.2	365.4
21	364.3	364.4	364.5	365.6	365.3	365.4	366.7	366.2	365.4
22	364.3	364.4	364.5	365.6	365.3	365.4	367.0	366.1	365.5
23	364.3	364.4	364.6	365.5	365.3	365.4	367.1	366.1	365.5
24	364.3	364.4	364.6	365.4	365.4	365.4	366.9	366.0	365.7
25	364.3	364.3	364.6	365.4	365.4	365.4	366.8	366.0	365.8
26	364.3	364.3	364.6	365.3	365.3	365.5	366.9	365.9	365.6
27	364.3	364.3	364.6	365.3	365.3	365.7	366.8	365.9	365.4
28	364.3	364.3	364.6	365.2	365.2	366.1	366.8	365.8	365.0
29	364.3	364.2	364.6	365.2	365.2	366.4	366.7	366.7	364.8
30	364.4	364.2	364.6	365.2	.....	366.8	366.5	365.7	364.7
31	364.4	.....	364.6	365.2	.....	368.0	.....	365.6	.....

NOTE.— Gage datum Elev. 359.84. Gage read and reduced elevations published both to tenths of a foot. Above record is of doubtful accuracy, based on comparisons with gages on Onondaga lake at Syracuse and on Seneca river, especially during first part of May.



## ONEIDA RIVER BASIN

### DESCRIPTION

The territory drained by the Oneida river is, in shape, roughly a square of about forty miles on the side, lying west of the upper portion of the Mohawk drainage basin. From its northeast corner a peninsula like area of about 80 square miles, drained by the upper portion of East branch Fish creek, projects northward between the Salmon and Black river drainage areas.

The total drainage area is 1,493 square miles of which the run-off from 1,353 square miles or slightly over 90 per cent passes through Oneida lake which has a water-surface of 78 square miles or  $5\frac{3}{4}$  per cent of the area above its outlet and an annual range of surface of about 3 to 6 feet, which together with the dam and gate at Caughdenoy offers facilities for considerable regulation of the flow in the Oneida river.

There is a small amount of local storage for and diversion to the old Erie canal in the southern portion of this basin. Water is also diverted into this drainage area from the Black and Mohawk basins through the summit levels of the old Erie and new Barge canals.

The outflow from this basin through the Oneida river unites with that of the Seneca river at Three River Point to form the Oswego river.

For table of areas of this drainage basin see page 61.

## ONEIDA RIVER

The Oneida river is a winding stream about  $17\frac{3}{4}$  miles long extending from Brewerton at the outlet of Oneida lake to Three River Point where it unites with the Seneca to form the Oswego river.

The Oneida river has been canalized in connection with the construction of the Barge canal. Two large and two smaller bends have been cut off, but on the largest cut-off, that opposite the new Caughdenoy dam, is located Barge canal lock No. 23 and normally only that portion of the flow of the river required for canal purposes at the lock passes through this channel. However, considerable water has been diverted through the lock culverts to facilitate construction work.

About four miles below Brewerton and about two and a half miles below the east end of the Caughdenoy cut-off and about 600 feet above the old lock and highway bridge, a dam has been constructed to retain a low navigable surface in Oneida lake and above lock 23 at Elev. 369.9. This dam is a concrete structure with a straight ogee type crest 415 feet long at Elev. 369.63. In the old canal lock a vertical lift-gate has been constructed with a clear span of thirty feet nine inches and sill at Elev. 362.73. The dam was completed in the summer of 1909, and the gate January 1, 1914.

Below lock 23, a low navigable surface is maintained at Elev. 363.0 by the dam on the Oswego river at Phoenix.

Occasional apparent inconsistencies in the tables of water-surface elevation where the water level at an upstream gage is recorded slightly lower than at a point farther downstream, are, as a rule, not the result of actual mistakes, but arises from the fact that most of the gages are read to the nearest tenth foot only, and also from the fact that streams and lakes are sometimes affected by wind to such an extent as to cause the water-surface to be slightly higher at the downstream end of a level reach than at the upstream end.

## ONEIDA RIVER AT BREWERTON

This station is located on the Oneida river at Brewerton about 1,500 feet downstream from Oneida lake and indicates lake surface very closely. It was established April 22, 1904, to determine water-surface elevations only. The existing gage is a staff on the downstream side of the New York State boat-house on the right or north bank of the river about 500 feet below or west of the north abutment of the R. W. & O. R. R. bridge. Readings are taken twice daily—at 8:00 A. M. and 6:00 P. M.—to tenths with occasional half-tenths.

**Emendation.**—Because of an error in the bench-mark, 0.23 foot should be added to water-surface elevations at this station published previous to 1914.

Daily elevation of water-surface (B. C. Datum) of ONEIDA RIVER AT BREWERTON, for the nine months ending June 30, 1916. A. R. Merritt, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	371.0	371.2	371.4	372.15	372.7	371.4	372.42	372.6	372.05
2.....	371.0	371.2	371.4	372.25	372.8	371.4	373.07	372.5	371.8
3.....	371.1	371.2	371.35	372.3	372.7	371.4	373.5	372.5	371.9
4.....	371.2	371.2	371.35	372.4	372.6	371.3	373.92	372.4	371.9
5.....	371.3	371.15	371.3	372.5	372.5	371.3	373.95	372.3	371.9
6.....	371.4	371.2	371.3	372.6	372.5	371.2	373.9	372.2	371.9
7.....	371.45	371.15	371.25	372.7	372.4	371.2	373.85	372.1	371.9
8.....	371.4	371.1	371.2	372.8	372.3	371.1	373.8	372.1	371.9
9.....	371.4	371.1	371.2	372.8	372.3	371.1	373.7	372.0	371.8
10.....	371.45	371.05	371.15	372.75	372.2	371.1	373.6	372.0	371.8
11.....	371.5	371.0	371.1	372.7	372.1	371.1	373.5	371.9	371.7
12.....	371.5	371.0	371.1	372.65	372.0	371.0	373.4	371.9	371.5
13.....	371.45	371.0	371.1	372.6	371.9	371.0	373.3	371.8	371.5
14.....	371.4	371.05	371.05	372.6	371.8	371.0	373.4	371.8	371.5
15.....	371.3	371.0	371.0	372.5	371.7	370.9	373.3	371.7	371.5
16.....	371.3	371.0	371.05	372.5	371.7	370.8	373.3	371.7	371.9
17.....	371.4	371.05	371.1	372.4	371.6	370.7	373.25	371.85	371.55
18.....	371.45	371.1	371.1	372.4	371.5	370.6	373.2	372.5	371.65
19.....	371.5	371.75	371.2	372.3	371.4	370.6	373.1	372.82	371.8
20.....	371.5	371.2	371.3	372.3	371.3	370.6	373.1	372.9	371.85
21.....	371.5	371.4	371.55	372.2	371.3	370.5	373.1	372.9	371.9
22.....	371.45	371.5	371.42	372.2	371.3	370.5	373.1	372.85	371.8
23.....	371.45	371.5	371.52	372.1	371.4	370.5	373.0	372.9	371.8
24.....	371.5	371.6	371.62	372.2	371.4	370.5	373.0	372.9	371.75
25.....	371.45	371.5	371.7	372.2	371.3	370.6	373.0	372.8	371.7
26.....	371.4	371.55	371.7	372.3	371.7	370.6	372.9	372.75	371.7
27.....	371.4	371.5	371.75	372.4	371.4	370.6	372.87	372.6	371.62
28.....	371.35	371.5	371.8	372.5	371.3	370.6	372.8	372.5	371.6
29.....	371.35	371.4	371.87	372.6	371.3	370.7	372.72	372.35	371.5
30.....	371.3	371.4	371.97	372.6	.....	371.05	372.7	372.2	371.4
31.....	371.25	.....	372.1	372.7	.....	371.75	.....	372.1	.....

## ONEIDA RIVER AT CAUGHDENY

**Location.**— At the Caughdeny dam on the Oneida river about 600 feet above the highway bridge at Caughdeny and about four miles below Oneida lake.

**Records available.**— Water-surface elevations, April 22, 1904, to June 30, 1916. Discharge, January 1, 1910, to June 30, 1916. Dam completed during summer of 1909.

**Drainage Area.**— 1,377 square miles. (Measured on U. S. G. S. topographic maps.)

**Gages.**— Upper gage, staff on tree on right or north bank about 50 feet above dam. Lower gage, staff on downstream pile of row below old lock on left or south bank and about 700 feet below dam. Gages read once daily — at 11 A. M.— upper to half-tenths, lower to tenths.

**Control.**— Concrete dam with straight ogee type crest 415 feet long at Elev. 369.63 and a vertical lift-gate with clear span of 30 feet 9 inches and sill at Elev. 362.73.

**Discharge computations.**— Flow over dam computed using coefficient derived from U. S. Geological Survey experiments, submergence from U. S. Deep Waterways experiments. Flow through gate and diversion through lock culverts estimated by theoretical calculations.

**Extremes of discharge.**— Current period: Maximum discharge recorded, April 6, 7,820 second-feet. Minimum discharge recorded, November 13, 1,020 second-feet.

1910–1916: Maximum discharge recorded, March 30, 1913, 11,100 second-feet. Minimum discharge recorded, January 9, and March 13 and 14, 1914, zero second-feet, water below crest of dam and no reported diversion.

**Accuracy.**— Estimated flow within ten per cent. There are occasional short periods which can not now be definitely determined, for which the estimated discharge previously published is too large due to the use of a water-surface elevation incorrectly reported one foot too high.

**Diversion.**— From the southern portion of this drainage basin principally on Chittenango, Butternut, Oneida and Limestone creeks, there is storage and diversion for the water-supply of the old Erie canal. From the Black and Mohawk river basins there is diversion into this drainage area via the summit levels of the old Erie and new Barge canal.

**Regulation.**— By storage indicated under diversion and by Oneida lake surface of 78 square miles.

**Emendation.**— Elevation of water-surface below dam for September 15, 1914, should read 364.96 instead of 364.86 in Report of State Engineer for 1914, Vol. II, p. 124. For correction of water-surface elevations due to error of bench-mark see 1915 Report, Vol. II, p. 127. The 1915 Report, Vol. II, p. 131, should read, for August, 1915, mean (both tables), 1,298; per square mile, 0.943; depth, 1.09; for the year ending September 30, 1915, mean, 2,023; per square mile, 1.47; depth, 19.94.

Daily elevation of water-surface (B. C. Datum) of ONEIDA RIVER ABOVE DAM AT CAUGHDENOT, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	370.7	370.9	371.0	371.4	371.6	370.9	371.3	371.5	371.2
2.....	370.9	370.4	371.0	371.3	371.6	370.85	371.6	371.45	371.2
3.....	370.7	370.7	370.95	371.4	371.55	370.9	371.8	371.5	371.3
4.....	370.9	370.85	370.9	371.5	371.6	370.8	372.0	371.4	371.2
5.....	370.8	370.8	370.9	371.6	371.55	370.8	372.0	371.3	371.1
6.....	371.0	370.8	370.85	371.7	371.6	370.8	372.1	371.2	371.1
7.....	371.0	370.8	370.85	371.75	371.4	370.9	372.0	371.2	371.3
8.....	371.0	370.9	370.8	371.7	371.5	370.8	372.0	371.3	371.1
9.....	370.9	370.75	370.8	371.8	371.4	370.7	371.9	371.25	371.1
10.....	371.0	370.7	370.7	371.8	371.3	370.7	371.9	371.05	371.05
11.....	371.0	370.9	370.8	371.7	371.3	370.65	371.8	371.1	371.0
12.....	370.9	370.7	370.8	371.6	371.2	370.7	371.7	371.15	370.95
13.....	371.0	370.4	370.75	371.6	371.2	370.6	371.8	371.2	370.9
14.....	370.8	370.7	370.7	371.65	371.25	370.6	371.75	371.3	370.9
15.....	370.9	370.65	370.7	371.6	371.1	370.55	371.7	371.3	370.85
16.....	370.9	370.7	370.65	371.55	371.0	370.6	371.8	371.2	371.0
17.....	370.85	370.8	370.8	371.55	371.0	370.5	371.7	371.3	371.0
18.....	371.0	370.85	370.75	371.6	370.9	370.5	371.5	371.5	371.0
19.....	371.0	371.1	370.8	371.5	371.0	370.45	371.6	371.8	371.1
20.....	371.05	370.6	370.8	371.55	370.9	370.5	371.6	371.7	371.1
21.....	371.0	370.9	370.9	371.4	370.9	370.5	371.55	371.75	371.2
22.....	370.9	370.9	371.0	371.4	370.8	370.5	371.6	371.7	371.1
23.....	371.0	371.1	371.0	371.35	370.8	370.45	371.55	371.8	371.1
24.....	371.0	371.1	371.0	371.4	370.75	370.35	371.6	371.7	371.05
25.....	371.0	371.2	371.1	371.4	370.75	370.3	371.6	371.6	371.0
26.....	371.05	371.1	371.0	371.35	370.8	370.3	371.5	371.6	371.0
27.....	370.9	371.0	371.2	371.4	370.8	370.25	371.45	371.55	370.95
28.....	370.95	371.0	371.2	371.5	370.85	370.3	371.5	371.6	370.9
29.....	370.75	370.95	371.4	371.6	370.9	370.45	371.45	371.5	370.9
30.....	370.7	370.9	371.4	371.7	.....	370.7	371.5	371.1	370.95
31.....	370.9	.....	371.3	371.7	.....	371.0	.....	371.2	.....

Daily elevation of water-surface (B. C. Datum) of ONEIDA RIVER BELOW DAM AT CAUGHDENY, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1	364.6	364.7	364.9	365.9	367.2	365.9	368.3	367.3	366.2
2	364.9	364.2	364.9	365.9	367.2	365.7	369.3	367.2	366.3
3	364.7	364.4	364.8	366.2	367.0	365.7	368.9	367.2	366.1
4	364.9	364.6	364.8	366.7	367.1	365.5	370.2	367.1	366.1
5	364.9	364.6	364.8	366.8	366.9	365.6	370.2	366.9	366.1
6	365.3	364.6	364.7	367.2	366.8	365.6	370.2	366.7	366.2
7	365.3	364.6	364.7	367.5	366.6	365.9	370.1	366.6	366.6
8	365.3	364.8	364.6	367.5	366.6	365.6	370.0	366.3	366.1
9	365.1	364.5	364.5	367.5	366.6	365.5	369.8	365.5	366.0
10	365.1	364.4	364.4	367.4	366.4	365.4	369.6	365.6	365.9
11	365.0	364.7	364.6	366.9	366.3	365.3	369.4	365.4	365.7
12	365.0	364.4	364.7	366.7	366.2	365.5	369.2	365.4	365.6
13	365.0	364.2	364.7	366.7	366.1	365.4	369.1	365.4	365.6
14	364.8	364.5	364.6	366.8	366.0	365.3	369.2	365.5	365.5
15	364.9	364.4	364.7	366.6	365.9	365.2	368.9	365.4	365.7
16	364.9	364.5	364.6	366.7	365.8	365.7	368.7	365.5	365.9
17	364.9	364.6	364.9	367.1	365.7	365.3	368.6	366.2	365.8
18	365.1	364.7	364.7	367.8	365.6	365.4	368.2	366.6	365.8
19	365.0	364.8	364.8	368.0	365.9	365.3	368.1	367.2	366.1
20	365.1	364.5	364.9	367.5	365.8	365.3	368.0	367.2	366.0
21	365.1	364.9	364.9	366.4	365.8	365.2	368.0	367.2	366.1
22	365.0	364.9	364.9	366.2	365.6	365.1	368.0	367.1	366.1
23	365.1	365.2	365.0	366.1	365.5	365.0	367.9	367.3	366.0
24	365.0	365.2	365.0	366.2	365.4	364.9	368.0	367.7	366.1
25	365.0	365.4	365.2	366.2	365.3	364.8	367.9	367.4	366.1
26	364.9	365.2	365.4	366.2	365.4	364.9	367.8	367.2	365.8
27	364.8	365.0	365.7	366.3	365.5	364.8	367.7	367.1	365.7
28	364.8	365.0	365.8	367.1	366.0	364.8	367.6	367.0	365.5
29	364.7	364.9	366.0	367.1	366.0	365.0	367.4	366.7	365.5
30	364.6	364.8	365.9	367.2	.....	366.0	367.4	366.3	365.5
31	364.7	.....	365.8	367.1	.....	367.3	.....	366.2	.....

Daily discharge, in second-feet, of ONEIDA RIVER AT CAUGHDENY, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1	1,660	2,190	2,470	4,130	5,550	3,340	5,060	6,020	4,380
2	2,170	1,030	2,580	3,790	5,550	3,230	6,010	5,840	4,360
3	1,670	1,680	2,430	4,130	5,410	3,350	6,620	6,050	4,710
4	2,170	2,070	2,300	4,470	5,550	3,090	7,410	5,670	4,390
5	1,910	1,930	2,300	4,800	5,420	3,080	7,410	5,300	4,080
6	2,450	1,940	2,180	5,200	5,580	3,080	7,820	5,020	4,060
7	2,450	1,940	2,180	5,260	4,870	3,330	7,410	4,390	4,650
8	2,450	2,190	2,040	5,190	5,230	3,080	7,410	3,410	4,080
9	2,170	1,800	2,040	5,520	4,870	2,830	7,080	3,190	4,090
10	2,460	1,680	1,720	5,520	4,540	2,840	7,170	2,570	3,950
11	2,450	2,190	1,970	5,190	4,550	3,200	6,800	2,720	3,810
12	2,170	1,680	2,310	4,800	4,240	3,760	6,500	2,900	3,660
13	2,450	1,020	2,170	4,810	4,240	3,510	6,890	3,020	3,530
14	1,670	1,690	2,060	5,040	4,420	3,520	6,670	3,330	3,540
15	2,170	1,570	2,060	4,820	3,940	3,400	6,530	3,340	3,390

Daily discharge, in second-feet, of ONEIDA RIVER AT CAUGHDENOT, for the nine months ending June 30, 1916 — *Continued*

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
16.....	2,180	1,680	1,960	4,670	3,650	3,470	6,990	3,030	3,790
17.....	2,060	1,940	2,320	4,670	3,650	3,280	6,630	3,340	3,800
18.....	2,450	2,070	2,180	4,820	3,370	2,990	5,880	4,030	3,900
19.....	2,450	2,770	2,320	4,230	3,630	3,280	6,290	5,110	4,080
20.....	2,610	1,440	2,320	4,200	3,340	3,410	6,290	4,780	4,090
21.....	2,450	2,190	2,590	3,830	3,340	3,410	6,140	4,950	4,390
22.....	2,170	2,200	2,870	4,020	3,090	3,410	6,290	4,780	4,080
23.....	2,450	2,770	2,870	3,870	3,100	3,280	6,110	6,400	4,090
24.....	2,450	2,770	2,870	4,020	2,960	3,110	6,290	5,990	3,920
25.....	2,450	3,070	3,170	4,020	2,970	2,990	6,290	5,620	3,760
26.....	2,610	2,770	2,880	3,870	3,110	3,000	5,940	5,650	3,800
27.....	2,170	2,470	3,480	4,810	3,100	2,880	5,760	5,510	3,650
28.....	2,310	2,480	3,480	5,100	3,200	3,000	5,970	5,680	3,540
29.....	1,770	2,320	4,130	5,460	3,320	3,330	5,790	5,260	3,540
30.....	1,660	2,190	4,130	5,860	.....	3,860	6,000	4,060	3,680
31.....	2,180	.....	3,790	5,870	.....	4,550	.....	4,390	.....
Mean....	2,222	2,058	2,586	4,713	4,131	3,287	6,515	4,563	3,956

NOTE.—Diversion through lock No. 23 included in above quantities. The sluice-gate was open beginning Jan. 27, 1916, two feet; March 11, four and one-half feet; March 18, wide open May 7, closed to two feet; May 8, closed entirely; May 23, open three and a half feet; closed, July 9, 1916.

At lock 23 the culvert valves on one side were one-third open for 125 hours up to and including December 11, 1915; wide open December 11, 1915, to January 19, 1916; two-thirds open January 21 to January 31; wide open February 1 to March 31, 1916, then closed.

Monthly discharge of ONEIDA RIVER AT CAUGHDENOT, for the nine months ending June 30, 1916

[Drainage area, 1,377 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF
	Maximum	Minimum	Mean	Per square mile	Depth in inches on drainage area
October.....	2,610	1,660	2,222	1.61	1.86
November.....	3,070	1,020	2,058	1.49	1.66
December.....	4,130	1,720	2,586	1.88	2.17
January.....	5,870	3,790	4,713	3.42	3.94
February.....	5,580	2,960	4,131	3.00	3.24
March.....	4,550	2,830	3,287	2.39	2.76
April.....	7,820	5,060	6,515	4.73	5.28
May.....	6,400	2,570	4,563	3.31	3.82
June.....	4,710	3,390	3,956	2.87	3.20

### ONEIDA RIVER AT OAK ORCHARD

This station is located on the Oak Orchard highway bridge also known as Schroepel's bridge across the Oneida river at Oak Orchard, about seven and five-eighths miles upstream from the junction of the Oneida and Seneca rivers. It was established

April 23, 1904, just below the old lock at the Oak Orchard dam and then indicated water-surface below the dam. August 1, 1915, the gage was moved to its present location on the lower end of the south side of the old pier near the south or left-hand bank. The gage is a staff, and is read once daily—between 7 and 10 A. M.—to tenths. The bridge is about one-third of a mile below the site of the old dam which has been removed in connection with the canalization of the Oneida river for the Barge canal. Previous to 1914 this record was published as “below dam.”

**Emendation.**—Because of an error in the bench-mark, 0.13 foot should be added to all elevations of water-surface at Oak Orchard both above and below the dam, published previous to 1914.

Daily elevation of water-surface (B. C. Datum) of ONEIDA RIVER AT OAK ORCHARD,  
for the nine months ending June 30, 1916. LaRue Sitterly, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1	364.0	363.9	364.1	364.4	365.4	364.9	367.3	365.5	365.0
2	364.2	363.9	364.1	364.4	365.3	364.9	368.05	365.5	365.0
3	364.2	364.0	364.1	364.7	365.3	364.9	368.5	365.4	364.9
4	364.2	364.0	364.0	364.9	365.3	364.9	368.7	365.4	364.8
5	364.3	364.0	364.0	365.5	365.2	364.9	368.7	365.3	364.7
6	364.4	364.0	364.0	365.8	365.2	364.9	368.6	365.2	364.7
7	364.4	364.0	363.9	366.1	365.2	364.9	368.6	365.1	364.7
8	364.3	364.0	364.0	366.2	365.2	364.9	368.4	364.9	364.6
9	364.2	364.0	364.0	366.2	365.1	364.8	368.2	364.8	364.6
10	364.2	363.9	364.0	366.1	365.1	364.8	368.1	364.8	364.5
11	364.2	363.9	364.0	366.0	365.0	364.8	367.7	364.7	364.5
12	364.1	363.9	364.1	365.8	364.9	364.8	367.6	364.5	364.4
13	364.1	363.9	364.1	365.4	364.9	364.8	367.4	364.3	364.4
14	364.1	363.9	364.1	365.2	364.8	364.8	367.3	364.3	364.4
15	364.1	363.9	364.1	365.1	364.8	364.8	367.2	364.3	364.5
16	364.1	363.9	364.0	365.1	364.7	364.8	367.0	364.4	364.6
17	364.1	364.0	364.0	364.9	364.7	364.7	366.9	364.9	364.4
18	364.1	364.0	364.1	364.9	364.7	364.7	366.7	365.4	364.7
19	364.1	364.1	364.2	364.9	364.7	364.7	366.5	365.6	364.7
20	364.1	364.2	364.2	364.9	364.8	364.8	366.3	365.6	364.7
21	364.2	364.2	364.2	364.9	364.8	364.7	366.2	365.6	364.7
22	364.3	364.2	364.2	364.9	364.8	364.6	366.1	365.5	364.7
23	364.3	364.3	364.2	364.9	364.8	364.5	366.0	365.5	364.7
24	364.2	364.3	364.2	364.9	364.9	364.3	366.0	365.6	364.6
25	364.1	364.3	364.2	364.9	364.9	364.2	366.0	365.6	364.6
26	364.1	364.3	364.2	364.9	364.9	364.1	365.9	365.5	364.5
27	364.1	364.2	364.2	364.9	364.9	364.1	365.8	365.4	364.4
28	363.9	364.1	364.2	365.0	364.9	364.1	365.7	365.3	364.4
29	363.9	364.1	364.2	365.1	364.9	364.4	365.6	365.2	364.4
30	363.9	364.1	364.3	365.2	.....	365.45	365.6	365.1	364.4
31	363.9	.....	364.4	365.3	.....	366.3	.....	365.1	.....



## ONEIDA RIVER AT THREE RIVER POINT

This station, located at Three River Point, the junction of Seneca and Oneida rivers which form the Oswego river, was established April 16, 1904.

A staff gage is secured to the upstream end of the most northerly pier of the temporary tow-path bridge over the Oneida river just above the junction and is read once daily — at 7 A. M., October 1 to January 7, and April 9 to June 30, and at 8 A. M., January 8 to April 8 — to tenths.

Daily elevation of water-surface (B. C. Datum) of ONEIDA RIVER AT THREE RIVER POINT, for the nine months ending June 30, 1916. John Chamberlain, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	363.8	363.9	363.6	364.5	364.8	364.8	366.5	365.1	364.6
2.....	364.0	363.8	363.7	364.8	364.8	364.9	367.5	364.8	364.5
3.....	364.1	363.8	363.6	364.8	364.7	364.8	367.8	364.6	364.4
4.....	364.2	363.8	363.7	364.7	364.6	364.7	368.0	364.5	364.4
5.....	364.5	363.8	363.9	365.0	364.5	364.8	368.1	364.4	364.4
6.....	364.5	363.7	363.7	365.8	364.4	364.9	368.0	364.4	364.6
7.....	364.4	363.8	363.7	366.0	364.4	364.9	367.9	364.6	364.6
8.....	364.4	363.6	363.6	366.0	364.4	364.7	367.8	364.2	364.3
9.....	364.5	363.7	363.6	366.0	364.5	364.6	367.6	364.1	364.4
10.....	364.3	363.6	363.7	365.9	364.5	364.5	367.4	364.4	364.2
11.....	364.3	363.6	363.7	365.6	364.4	364.5	367.3	364.4	364.3
12.....	363.9	363.6	363.8	365.8	364.4	364.6	367.0	364.3	364.2
13.....	364.1	363.6	363.8	365.4	364.5	364.6	366.8	364.2	364.4
14.....	364.0	363.7	363.7	365.3	364.5	364.5	366.6	364.0	364.3
15.....	363.9	363.7	363.7	365.2	364.4	364.5	366.4	364.0	364.4
16.....	364.0	363.8	363.8	365.1	364.5	364.6	366.3	363.9	364.5
17.....	364.0	363.9	363.8	365.0	364.4	364.5	366.2	364.3	364.5
18.....	364.0	363.9	364.0	365.1	364.4	364.5	366.0	365.0	364.4
19.....	364.1	364.0	364.0	365.2	364.4	364.6	365.8	365.3	364.5
20.....	364.1	364.0	364.0	365.3	364.5	364.5	365.7	365.2	364.5
21.....	364.0	364.1	363.9	365.2	364.5	364.4	365.6	365.3	364.4
22.....	364.1	363.9	363.9	365.2	364.5	364.4	365.4	365.0	364.5
23.....	364.1	364.0	363.9	365.2	364.4	364.3	365.5	365.1	364.4
24.....	364.1	364.0	364.0	365.0	364.4	364.1	365.6	365.3	364.3
25.....	364.1	364.0	364.0	365.0	364.4	364.0	365.4	365.1	364.5
26.....	364.0	363.9	364.5	365.0	364.5	364.1	365.3	365.0	364.4
27.....	364.0	363.8	364.6	364.8	364.6	364.0	365.3	364.8	364.4
28.....	363.9	363.7	364.8	364.9	364.6	363.9	365.2	364.7	364.2
29.....	363.8	363.6	364.8	364.8	364.8	364.4	365.1	364.6	364.3
30.....	363.8	363.7	364.3	364.8	.....	365.0	365.2	364.6	364.2
31.....	364.0	.....	364.3	364.8	.....	366.0	.....	364.5	.....

## ONEIDA LAKE

Oneida lake with a water-surface of 78 square miles is about  $20\frac{3}{4}$  miles long and 4 to 5 miles wide the greater part of its length. Its depth varies from 20 to 50 feet but there are several shoals. The total drainage area above its outlet is 1,353 square miles of which the lake surface constitutes five and three-quarters per cent. The drainage basin within a radius of ten miles to the south and west is relatively flat, with numerous swampy tracts. The lake receives, through Chittenango and Oneida creeks, drainage from an extensive area of the central New York plateau and, through Wood and Fish creeks on the east, drainage from a portion of the west slope of the plateau bordering the Adirondack mountains. On the north the drainage area is less extensive and the inflowing streams are small.

The Barge canal traverses the length of the lake. A low navigable surface is maintained at Elev. 369.9 by the Caughdenoy dam four miles down the Oneida river, a description of which is given under the Oneida river.

A chart of Oneida lake has been prepared in four colors at a scale of 1:40,000 by the War Department in connection with the survey of the northern and northwestern lakes entitled, Chart No. 4 New York State Canals from Lock 22 to Lock 23 including Oneida Lake, issued November 12, 1913, catalog number 184, price 15 cents.

For elevation of west end of Oneida lake see Oneida river at Brewerton.

The following table gives the elevations of extreme high and low-water surface each year of Oneida lake as indicated by gages at Brewerton at the west and Sylvan Beach at the east end of the lake. The gage at Brewerton is about 1,500 feet down the outlet while that at Sylvan Beach is about 800 feet up Fish creek from the lake. The difference between extreme surface at each end of the lake is probably mainly due to wind supplemented by such slight slope between the gage and lake as may occur during times of large flow.

## Annual high and low water-surface elevation of ONEIDA LAKE

YEAR	BREWERTON			SYLVAN BEACH		
	SURFACE ELEVATION		Range	SURFACE ELEVATION		Range
	High	Low		High	Low	
			<i>Feet</i>			<i>Feet</i>
1904.....	374.0	369.1	4.9	.....	.....	.....
1905.....	374.9	369.9	5.0	375.4	370.5	4.9
1906.....	372.8	368.7	4.1	373.1	368.9	4.2
1907.....	372.9	369.1	3.8	373.1	369.2	3.9
1908.....	373.4	368.6	4.8	373.7	368.5	5.2
1909.....	374.5	370.0	4.5	374.5	369.8	4.7
1910.....	373.9	369.1	4.8	374.0	370.0	4.0
1911.....	374.2	370.2	4.0	374.3	369.7	4.6
1912.....	375.3	370.2	5.1	376.9	370.0	6.9
1913.....	375.3	369.6	5.7	377.0	369.3	7.7
1914.....	374.2	369.7	4.5	375.8	369.8	6.0
1915.....	372.5	369.5	3.0	372.4	369.5	2.9

## ONEIDA LAKE AT SYLVAN BEACH

This station is located at the east end of Oneida lake at Sylvan Beach. It was established July 1, 1904. The existing gage is a staff attached to the corner of the crib dock on the right-hand or north bank of canalized Fish creek, just above or east of Railroad street bridge and about 800 feet from the lake. The gage is read twice daily — at 9:00 A. M. and 2:00 P. M.—to tenths.

Daily elevation of water-surface (B. C. Datum) of ONEIDA LAKE AT SYLVAN BEACH, for the nine months ending June 30, 1916. Wm. H. Dunn, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	371.0	371.6	371.6	371.5	372.6	371.3	372.0	373.7	372.2
2.....	371.0	371.6	371.5	372.3	372.5	371.2	372.6	373.7	372.1
3.....	371.0	371.4	371.5	372.4	372.5	371.2	373.0	373.4	372.1
4.....	371.0	371.3	371.5	372.5	372.4	371.1	373.0	373.2	372.0
5.....	371.0	371.1	371.5	372.6	372.4	371.2	373.9	373.0	372.0
6.....	371.1	371.1	371.5	372.6	372.3	371.2	374.0	373.0	372.0
7.....	371.1	371.1	371.4	372.6	372.1	371.2	373.9	373.0	371.9
8.....	371.1	371.1	371.4	372.6	372.0	371.2	373.8	373.0	371.8
9.....	371.1	371.1	371.4	372.4	372.0	371.1	373.7	373.0	371.8
10.....	371.2	371.1	371.4	372.4	372.0	371.1	373.6	372.8	371.6
11.....	371.2	371.1	371.3	372.3	371.9	371.1	373.6	372.6	371.3
12.....	371.2	371.0	371.3	372.3	371.9	371.1	373.4	372.5	371.4
13.....	371.2	371.0	371.3	372.3	371.8	371.0	373.4	372.4	371.4
14.....	371.2	371.0	371.4	372.2	371.7	371.0	373.4	371.8	371.4
15.....	371.0	371.0	371.4	372.2	371.6	370.9	373.4	371.8	371.5

Daily elevation of water-surface (B. C. Datum) of ONEIDA LAKE AT SYLVAN BEACH,  
for the nine months ending June 30, 1916 — *Continued*

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
16.....	371.0	371.0	371.4	372.2	371.6	370.9	373.3	371.8	371.6
17.....	371.0	371.0	371.4	372.15	371.5	370.8	373.3	371.8	371.7
18.....	371.0	371.0	371.4	372.1	371.5	370.8	373.4	372.8	371.8
19.....	371.0	371.2	371.4	372.1	371.4	370.8	373.4	373.0	371.9
20.....	370.9	371.5	371.4	372.1	371.4	380.8	373.5	373.0	371.9
21.....	370.9	371.4	371.4	372.1	371.3	370.7	373.5	373.0	371.9
22.....	370.8	371.4	371.4	372.1	371.3	370.7	373.5	373.0	372.0
23.....	370.8	371.4	371.3	372.1	371.4	370.7	373.6	372.8	372.0
24.....	370.9	371.3	371.3	372.15	371.5	370.6	373.6	372.8	372.0
25.....	371.0	371.3	371.3	372.3	371.5	370.6	373.7	372.8	372.0
26.....	371.3	371.3	371.4	372.35	371.5	370.6	373.7	372.6	371.9
27.....	371.5	371.5	371.4	372.45	371.5	370.7	373.7	372.5	371.8
28.....	371.5	371.5	371.4	372.5	371.5	370.7	373.7	372.4	371.7
29.....	371.4	371.6	371.5	372.6	371.4	370.8	373.8	372.3	371.6
30.....	371.4	371.6	371.5	372.65	.....	371.4	373.8	372.3	371.6
31.....	371.5	.....	371.5	372.7	.....	371.9	.....	372.2	.....

## ONEIDA CREEK

### DESCRIPTION

The headwaters of Oneida creek are in northeastern Madison county. Above Peterboro the drainage is mostly through a swamp averaging one-half mile in width by  $2\frac{1}{2}$  miles in length. The stream flows easterly from this swamp to the foot of the falls above Munnsville. In the vicinity of the falls the stream descends from elevation 1,100 to elevation 700 in about three miles. From Munnsville to Oneida the creek flows through a somewhat dissected valley of one mile average width, bordered by steep slopes rising 500 feet or more within a distance of one mile on either side. North of Oneida Castle the drainage is rather flat. Oneida creek enters the eastern end of Oneida lake near South Bay, the elevation of the lake being at 370. Water-power is utilized at Oneida Community and at Munnsville. A feeder dam at Oneida Castle diverts most of the low-water flow to the Erie canal through a feeder 2.9 miles long, entering the canal at Durhamville. The drainage basin as a whole is irregularly pear-shaped and the upper basin is broad. The slopes are steep and the tributaries are well distributed and moderately branching. This basin is shown on the Morrisville, Oneida, Chittenango and Cazenovia sheets of the U. S. Geological Survey topographic maps.

**ONEIDA CREEK AT KENWOOD**

**Location.**—At the Oneida Community dam and silk-mill at Kenwood.

**Records available.**— June 11, 1907, to June 30, 1916.

**Drainage area.**—Sixty-three square miles.

**Gages.**— Vertical staffs read twice daily.

**Control.**— Timber crib dam with fairly level crest, three auxiliary spillways and turbines in mill.

**Discharge computations.**— The discharge over the dam is computed by use of coefficients determined in part by current-meter measurements. The water-surface is assumed to vary uniformly between observations in order to determine the length of time and head of flows over the crest as a basis for computation. Flow through turbines based on Department's rating of wheels by meter measurements in tail-race.

**Extremes of discharge.**—Current period: Maximum discharge recorded, afternoon of March 31, 100 second feet. Minimum discharge recorded on nine days during the months of December to April, inclusive, 37 second-feet.

1907–1916: Maximum discharge recorded, morning of March 28, 1914, 1,710 second-feet. Minimum recorded discharge occurred at various times during the years 1907–1909 and 1912, when the wheels were shut down and there was no flow over the crest, the only discharge being that due to leakage, estimated at 3 second-feet.

**Accuracy.**— Local pondage, the operation of the wheels for short periods and the intermittent waste of water over spillways in the hydraulic raceway cause variations in the daily flow that produce an indeterminate error in the estimated mean daily discharge.

**Emendation.**— In August, 1912, a new deck was laid on the dam, which raised the average crest about two inches. Discharge previously published for 1912–1915 has been recomputed and is given hereinafter.

# GAGING OF STREAMS: OSWEGO-ONEIDA-SENECA BASIN 133

## Daily discharge, in second-feet, of ONEIDA CREEK AT KENWOOD

1912	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	81	52	81	111	101	81	55	16	17	28	51	112
2.....	48	75	81	106	94	86	55	12	31	39	39	250
3.....	46	90	81	106	101	124	55	98	46	34	46	275
4.....	42	81	81	112	92	106	68	81	*35	26	45	226
5.....	34	84	95	134	81	94	81	65	*26	24	50	219
6.....	61	78	81	100	85	76	68	....	*24	31	41	267
7.....	81	84	86	81	94	70	68	....	22	37	46	177
8.....	48	83	81	112	104	65	47	....	42	24	91	145
9.....	43	79	81	101	101	68	33	....	33	34	65	101
10.....	35	81	81	101	94	81	25	....	25	30	69	51
11.....	36	81	95	107	106	58	20	....	20	37	57	29
12.....	35	82	86	94	81	74	19	....	36	39	51	33
13.....	60	82	95	89	112	64	15	....	20	42	69	43
14.....	81	82	100	81	112	45	60	....	16	29	129	42
15.....	50	84	115	113	112	42	47	22	25	26	129	46
16.....	82	84	81	102	101	44	23	27	36	25	72	41
17.....	70	84	115	102	106	46	15	17	22	25	91	54
18.....	95	81	166	102	95	57	15	46	23	27	117	61
19.....	95	87	106	94	81	40	16	34	36	32	101	71
20.....	90	88	114	95	112	29	10	22	25	46	84	106
21.....	81	82	98	81	101	49	60	22	28	25	80	96
22.....	82	81	87	94	120	*36	47	22	46	27	68	74
23.....	56	82	75	95	85	*25	35	22	42	26	71	101
24.....	54	81	94	102	76	26	19	16	38	118	51	96
25.....	58	81	88	108	74	27	19	42	138	101	101	192
26.....	50	81	94	108	81	20	12	35	68	79	88	112
27.....	41	81	88	101	70	17	10	22	51	51	99	130
28.....	81	81	99	95	63	16	3	23	35	96	135	85
29.....	44	81	169	112	76	10	18	22	57	63	121	74
30.....	76	....	99	106	81	44	16	23	43	54	105	91
31.....	63	....	81	....	94	....	18	16	....	41	....	102
Mean...	61.3	81.1	96.2	102	93.1	64.1	33.9	31.5	36.9	42.4	78.7	113

This table supersedes table published in Report of State Engineer for 1912, Vol. II, page 75.  
 \* Estimated; water drawn down for repairs. August 6-14 new crest put on dam; mean discharge estimated as 30 sec.-ft.

## Monthly discharge of ONEIDA CREEK AT KENWOOD

[Drainage area, 63 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF
	Maximum	Minimum	Mean	Per square mile	Depth in inches on drainage area
1912					
January .....	95	34	61.3	0.973	1.12
February .....	90	52	81.1	1.287	1.39
March .....	169	75	96.2	1.527	1.76
April .....	134	81	102	1.611	1.80
May .....	120	63	93.1	1.478	1.70
June .....	124	10	54.1	0.859	0.96
July .....	81	3	33.9	0.538	0.62
August .....	98	12	31.5	0.500	0.58
September .....	138	16	36.9	0.586	0.65
October .....	118	24	42.4	0.673	0.75
November .....	136	39	73.7	1.249	1.39
December .....	275	29	113	1.797	2.07
The year .....	275	3	68.6	1.089	14.82

NOTE.—This table supersedes table published in Report of State Engineer for 1912, Vol. II, page 75.

## Daily discharge, in second-feet, of ONEIDA CREEK AT KENWOOD

1913	Jan.	Feb.	M.r.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	155	89	141	249	41	37	28	8	28	15	22	48
2.....	192	91	145	200	33	51	25	15	30	28	13	40
3.....	192	104	183	170	31	34	20	9	27	31	34	37
4.....	249	56	176	155	28	27	8	28	23	16	28	30
5.....	91	54	183	192	48	28	15	22	22	25	26	26
6.....	246	42	162	112	40	36	28	21	20	37	31	28
7.....	486	36	130	134	34	12	28	21	31	28	37	46
8.....	610	35	118	134	39	24	17	21	39	23	*37	30
9.....	345	31	192	112	37	47	31	20	28	26	*49	39
10.....	288	45	326	51	33	26	33	10	22	30	64	40
11.....	307	39	407	170	13	28	30	26	20	12	43	40
12.....	275	36	318	96	40	27	15	24	17	8	41	43
13.....	171	27	226	74	35	28	11	24	15	21	55	42
14.....	68	27	345	91	22	18	30	20	15	24	34	42
15.....	79	32	320	91	29	12	21	20	34	30	43	50
16.....	83	25	262	82	32	32	30	15	28	22	37	50
17.....	255	26	207	33	22	28	19	8	31	21	*37	45
18.....	444	24	138	62	21	25	19	20	31	15	*27	42
19.....	128	24	109	169	45	29	19	12	21	37	24	34
20.....	138	26	117	42	34	29	9	14	22	96	34	31
21.....	171	184	109	45	26	25	23	18	64	104	45	46
22.....	143	214	84	42	25	17	23	20	80	64	40	48
23.....	146	128	82	68	29	30	19	15	51	50	46	47
24.....	161	56	109	54	56	28	21	12	43	42	48	48
25.....	117	45	1,044	39	31	28	21	28	33	35	40	46
26.....	121	56	871	31	64	30	22	19	29	51	22	50
27.....	147	208	859	28	40	28	8	17	18	50	17	49
28.....	152	308	743	58	91	9	22	17	25	42	46	46
29.....	130	...	397	58	58	21	20	17	36	30	43	50
30.....	124	...	337	47	25	30	24	15	27	28	46	53
31.....	101	...	284	...	31	...	21	9	...	30	...	48
Mean...	204	73.9	294	96.3	36.6	27.5	21.3	17.6	30.3	34.6	37.6	42.4

NOTE.—This table supersedes table published in Report of State Engineer for 1913, Vol. II, page 83.

\* Estimated, water drawn down for repairs to banks.

## Monthly discharge of ONEIDA CREEK AT KENWOOD

[Drainage area, 63 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF
	Maximum	Minimum	Mean	Per square mile	Depth in inches on drainage area
1913					
January . . . . .	610	68	204	3.233	3.73
February . . . . .	308	24	73.9	1.173	1.22
March . . . . .	1,044	82	294	4.671	5.38
April . . . . .	249	28	96.3	1.529	1.70
May . . . . .	91	13	36.6	0.581	0.67
June . . . . .	51	9	27.5	0.437	0.49
July . . . . .	33	8	21.3	0.338	0.39
August . . . . .	28	8	17.6	0.279	0.32
September . . . . .	80	15	30.3	0.481	0.54
October . . . . .	104	8	34.6	0.549	0.63
November . . . . .	64	13	37.6	0.597	0.66
December . . . . .	53	26	42.4	0.673	0.78
The year . . . . .	1,044	8	76.6	1.216	16.51

NOTE.—This table supersedes table published in Report of State Engineer for 1913, Vol. II, page 84.

## Daily discharge, in second-feet, of ONEIDA CREEK AT KENWOOD

1914	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	46	91	71	564	82	12	16	33	60	34	42	52
2.....	51	71	51	546	82	9	16	21	57	30	57	69
3.....	48	54	44	350	74	10	15	24	51	29	49	57
4.....	51	59	44	297	69	9	8	20	41	28	43	47
5.....	51	71	47	128	58	9	8	23	37	41	32	42
6.....	39	76	58	64	134	10	14	23	28	28	25	37
7.....	49	55	57	145	102	8	14	18	28	32	28	42
8.....	62	46	57	1,483	92	1,552	12	14	34	32	42	46
9.....	68	51	46	480	69	254	16	10	30	41	57	46
10.....	48	57	51	200	57	165	14	19	33	28	50	57
11.....	46	56	46	232	42	136	18	22	37	37	48	47
12.....	54	49	46	155	46	105	8	18	34	40	48	46
13.....	49	53	57	162	193	75	16	18	37	36	42	46
14.....	44	40	64	112	98	51	15	17	41	32	37	57
15.....	49	46	69	128	75	30	17	8	37	32	51	46
16.....	63	59	232	262	51	17	17	10	39	27	70	42
17.....	54	49	317	234	42	19	19	22	33	21	56	37
18.....	46	44	253	220	37	15	21	18	30	21	46	37
19.....	57	52	189	220	32	10	8	22	26	25	42	46
20.....	80	54	128	306	28	19	20	67	25	23	38	43
21.....	58	46	102	275	32	9	14	91	39	21	31	37
22.....	63	46	96	197	28	13	17	51	37	23	31	46
23.....	70	43	69	138	31	13	19	46	33	27	43	46
24.....	87	39	64	91	31	13	18	34	30	29	44	37
25.....	64	34	196	74	29	11	13	39	32	28	49	37
26.....	70	37	743	220	24	15	22	32	35	38	57	28
27.....	70	48	1,181	155	19	14	8	42	28	33	46	37
28.....	227	55	1,646	113	23	8	18	62	39	29	47	37
29.....	299	.....	660	96	19	47	19	78	34	27	57	46
30.....	358	.....	517	112	9	16	18	74	28	40	48	51
31.....	265	.....	217	.....	10	.....	18	62	.....	29	.....	46
Mean...	86.6	52.9	239	259	55.4	89.1	15.2	33.5	35.8	30.4	45.2	44.8

NOTE.—This table supersedes table published in Report of State Engineer for 1914, Vol. II page 138.

Monthly discharge of ONEIDA CREEK AT KENWOOD  
[Drainage area, 63 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF
	Maximum	Minimum	Mean	Per square mile	Depth in inches on drainage area
1914					
January . . . . .	358	39	86.6	1.375	1.58
February . . . . .	91	34	52.9	0.840	0.88
March . . . . .	1,646	44	239	3.798	4.38
April . . . . .	1,483	64	259	4.105	4.68
May . . . . .	193	9	55.4	0.879	1.01
June . . . . .	1,552	8	89.1	1.414	1.58
July . . . . .	22	8	15.2	0.241	0.28
August . . . . .	91	8	33.5	0.532	0.61
September . . . . .	60	25	35.8	0.568	0.62
October . . . . .	41	21	30.4	0.483	0.56
November . . . . .	70	25	45.2	0.717	0.80
December . . . . .	69	28	44.8	0.711	0.82
The year . . . . .	1,646	8	82.2	1.305	17.71

NOTE.—This table supersedes table published in Report of State Engineer for 1914, Vol. II, page 138.



Daily discharge, in second-feet, of ONEIDA CREEK AT KENWOOD, for the year ending  
September 30, 1915

DATE	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1.....	34	42	52	46	57	46	46	69	59	83	57	46
2.....	30	57	69	46	46	46	47	52	42	84	46	46
3.....	29	49	57	46	46	47	46	47	37	68	121	46
4.....	28	43	47	42	47	46	48	46	38	64	108	38
5.....	41	32	42	51	46	46	69	46	39	65	66	37
6.....	28	25	37	69	57	46	69	46	37	58	57	37
7.....	32	28	42	97	69	57	57	37	38	51	64	40
8.....	32	42	46	64	47	46	57	53	37	161	57	33
9.....	41	57	46	46	46	47	65	46	38	111	57	28
10.....	28	50	57	46	37	46	74	46	42	77	52	33
11.....	37	48	47	46	51	46	74	49	50	57	53	28
12.....	40	48	46	47	65	51	82	47	41	199	51	28
13.....	36	42	46	57	51	46	76	56	31	87	54	40
14.....	32	37	57	46	57	46	74	61	43	81	48	70
15.....	32	51	46	64	102	57	69	48	54	75	53	63
16.....	27	70	42	69	74	57	63	46	48	64	55	88
17.....	21	56	37	64	51	47	57	63	46	56	72	71
18.....	21	46	37	103	46	46	57	60	51	46	60	52
19.....	25	42	46	91	46	51	59	57	67	50	46	46
20.....	28	38	48	64	51	47	46	48	57	53	46	49
21.....	21	31	37	46	51	51	51	46	51	47	47	46
22.....	28	31	46	43	52	57	51	51	56	41	64	61
23.....	27	48	46	37	57	57	46	46	94	49	69	53
24.....	29	46	37	46	74	49	57	52	86	40	53	49
25.....	28	49	37	46	64	51	51	46	53	46	46	47
26.....	36	57	28	46	51	57	46	54	59	56	47	53
27.....	38	46	37	46	46	46	50	57	46	84	46	62
28.....	29	47	37	47	46	46	45	52	50	64	46	56
29.....	27	57	46	46	46	47	57	46	46	59	47	46
30.....	40	48	51	46	46	46	71	46	51	58	46	47
31.....	29	46	46	46	46	46	46	46	46	57	46	46
Mean...	30.4	45.2	44.8	54.8	54.8	49.0	58.7	50.6	48.7	70.7	57.4	47.8

NOTE.— This table supersedes table published in Report of State Engineer for 1915, Vol. II, page 138.

Monthly discharge of ONEIDA CREEK AT KENWOOD, for the year ending September  
30, 1915

[Drainage area, 63 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF
	Maximum	Minimum	Mean	Per square mile	
October.....	41	21	39.4	0.483	0.56
November.....	70	25	45.2	0.717	0.80
December.....	69	28	44.8	0.711	0.82
January.....	103	37	54.8	0.869	1.00
February.....	102	37	54.8	0.869	0.90
March.....	57	46	49.0	0.778	0.90
April.....	82	45	58.7	0.931	1.04
May.....	69	37	50.6	0.803	0.93
June.....	94	31	48.7	0.773	0.86
July.....	199	40	70.7	1.122	1.30
August.....	121	46	57.4	0.911	1.05
September.....	83	28	47.8	0.759	0.85
The year.....	199	21	51.1	0.810	11.01

NOTE.— This table supersedes table published in Report of State Engineer for 1915, Vol. II, page 138.

# GAGING OF STREAMS: OSWEGO-ONEIDA-SENECA BASIN 137

Daily discharge, in second-feet, of ONEIDA CREEK AT KENWOOD, for the nine months ending June 30, 1916. Arthur Mason, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	46	46	46	51	61	74	799	87	69
2.....	57	49	46	373	69	66	605	96	69
3.....	77	53	42	332	57	68	148	96	69
4.....	58	57	38	121	60	56	194	82	75
5.....	82	57	42	155	57	51	140	116	91
6.....	77	47	51	262	57	55	82	95	91
7.....	60	46	57	84	57	59	74	82	91
8.....	60	46	47	57	57	59	76	69	91
9.....	51	53	57	57	57	55	64	69	91
10.....	57	51	46	57	48	55	70	69	91
11.....	49	46	39	57	46	51	70	69	82
12.....	46	52	37	61	46	46	72	64	102
13.....	46	53	46	51	42	55	57	63	91
14.....	46	53	46	57	37	52	64	57	69
15.....	82	69	46	46	42	59	58	57	82
16.....	69	61	37	46	55	55	46	57	91
17.....	57	57	57	48	57	55	46	57	91
18.....	57	46	192	46	46	50	46	300	82
19.....	77	72	82	46	46	46	46	328	91
20.....	73	100	51	57	46	35	62	309	96
21.....	57	91	46	64	46	69	46	228	102
22.....	54	77	47	82	54	66	84	91	91
23.....	46	61	51	74	56	49	64	46	74
24.....	46	58	74	69	54	66	82	74	83
25.....	51	46	38	73	255	62	57	82	82
26.....	46	46	64	60	373	119	57	69	82
27.....	63	60	57	62	207	963	46	69	91
28.....	46	46	69	74	109	710	48	64	82
29.....	49	46	57	69	69	393	46	65	82
30.....	46	46	58	78	.....	752	46	57	82
31.....	46	.....	51	82	.....	708	.....	74	.....
Mean.....	57.5	58.1	57.8	60.7	82.7	157	111	93.6	65.2

Monthly discharge of ONEIDA CREEK AT KENWOOD, for the nine months ending June 30, 1916

[Drainage area, 63 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF Depth in inches on drainage area
	Maximum	Minimum	Mean	Per square mile	
October.....	82	46	57.6	0.914	1.65
November.....	100	46	56.1	0.890	0.69
December.....	192	37	57.3	0.910	1.65
January.....	373	46	89.7	1.424	1.64
February.....	373	37	82.7	1.313	1.42
March.....	798	46	157	2.492	2.87
April.....	720	42	111	1.762	1.97
May.....	328	57	93.6	1.486	1.71
June.....	102	69	85.2	1.332	1.51

## CHITTENANGO CREEK

## DESCRIPTION

Chittenango creek is the principal tributary of Oneida lake from the south. It comprises three main branches, namely, Butternut creek, Limestone creek and Chittenango creek proper. The three branches join near North Manlius. Above the junction of Butternut creek, Chittenango creek flows through an irregular dumb-bell-shaped area extending in a northwest and southeast direction. This area lies chiefly in the dissected, hilly region south of the line of the New York Central railroad. The length of the basin is about 22 miles. Its width in the upper portion is 9 miles; in the middle portion, 4 miles; in the lower portion, 7 miles. The drainage basin is deeply rolling, mostly cleared and has a heavy, impervious soil with extensive sodded-meadow areas. The soil is underlaid by shale rock, often outcropping, and affording numerous springs. The stream tributaries are somewhat sparse. Marsh and swamp areas are very limited, with the exception of the Nelson swamp, about two square miles in area.

The outflow from Cazenovia lake is regulated and there is also a reservoir at Erieville. These reservoirs are used to supply the summit level of the Erie canal. The capacities of these reservoirs are given as follows in New York State Barge Canal Report for 1901, page 663:

*Erieville Reservoir*

Storage capacity . . . . .	318,424,000 cubic feet
Water-surface . . . . .	340 acres

*Cazenovia Lake*

Storage capacity . . . . .	206,997,000 cubic feet
Water-surface . . . . .	1.7 square miles

The head of the stream is near Erieville reservoir, which is formed by a dam crossing a small stream valley, formerly tributary to Chenango river through Eaton brook. Cazenovia lake is located 10 miles below Erieville reservoir, which is at the head of the stream at elevation 1,190. From its outlet to the foot of the plateau at Erie canal crossing, the stream descends 770 feet, the distance, following the general trend of the valley, being 11 miles. At Chittenango falls there occurs a precipitous descent of about 100 feet.

## CHITTENANGO CREEK AT CHITTENANGO

This station, established May 22, 1901, is located at the Main street bridge over Chittenango creek at Chittenango. This was originally a discharge station but since 1911 has been maintained for water-surface elevation only. The gage is a staff secured to the downstream end of the left-hand abutment and is read twice daily — at 8 A. M. and 5 P. M.— to tenths. The odd hundredths in the table are due to the datum of the gage.

Daily elevation of water-surface (B. C. Datum) of CHITTENANGO CREEK AT CHITTENANGO, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	451.92	451.87	451.92	452.47	452.92	452.12	454.32	452.32	452.02
2.....	452.47	451.87	451.92	453.87	452.37	452.07	453.92	452.32	451.92
3.....	452.37	451.97	451.87	453.57	452.32	452.09	453.52	451.32	452.27
4.....	452.02	451.92	451.87	452.97	452.02	451.92	453.42	452.47	452.27
5.....	452.67	452.32	451.92	453.92	452.07	451.92	453.32	45.32	452.07
6.....	453.22	452.12	451.87	453.62	452.32	451.87	453.22	453.22	451.87
7.....	452.17	451.92	451.77	452.97	452.32	451.97	453.07	452.17	451.77
8.....	451.97	451.92	451.87	452.62	452.17	451.92	452.42	452.17	451.92
9.....	451.92	452.07	451.97	452.37	452.02	451.92	452.92	452.27	451.92
10.....	451.92	451.92	451.92	452.52	452.12	451.92	452.92	452.22	451.92
11.....	451.92	451.92	451.87	452.62	452.22	451.92	452.82	452.17	452.02
12.....	451.92	451.92	451.87	452.52	452.22	451.92	453.12	451.97	451.97
13.....	452.02	451.87	451.92	452.72	452.22	451.92	452.87	451.92	451.87
14.....	451.97	451.87	451.92	452.37	451.97	451.92	452.87	451.92	451.92
15.....	452.87	452.27	451.92	452.32	451.92	451.92	452.77	452.02	451.82
16.....	452.32	452.27	451.92	452.27	451.92	451.92	452.57	452.02	451.97
17.....	451.92	452.02	451.92	452.27	451.92	451.92	452.62	453.87	452.02
18.....	451.87	451.97	452.77	452.27	451.92	451.92	452.62	453.17	452.17
19.....	452.57	452.37	452.62	452.12	451.92	451.92	452.37	452.62	452.07
20.....	452.27	452.77	452.47	452.12	451.82	451.92	452.32	452.47	452.17
21.....	452.07	452.47	452.32	452.27	451.82	452.02	452.52	452.37	451.92
22.....	451.92	452.32	452.22	453.52	451.82	451.97	452.77	452.27	451.92
23.....	451.87	452.27	452.27	452.97	451.92	451.97	452.77	452.42	451.77
24.....	451.87	452.02	452.22	452.57	451.92	451.97	452.72	452.27	451.82
25.....	451.77	451.97	452.37	452.52	452.07	452.12	452.52	452.17	451.72
26.....	451.77	452.07	452.92	452.72	452.32	452.32	452.37	451.97	451.67
27.....	451.92	452.12	452.67	453.02	452.22	452.67	452.32	452.07	452.12
28.....	451.82	451.92	452.52	453.12	452.12	453.27	452.37	452.12	452.17
29.....	451.87	451.92	452.27	452.72	452.07	453.72	452.32	452.12	451.87
30.....	451.82	451.97	452.17	452.77	.....	453.92	452.32	452.12	451.72
31.....	451.87	.....	452.27	452.62	.....	454.02	.....	452.07	.....

## BUTTERNUT CREEK

## DESCRIPTION

The headwaters of Butternut creek lie at elevation 1,700 feet, near the south line of Onondaga county. This stream drains a narrow basin about 24 miles in length and having an average width of about 3 miles. The stream flows in a northerly direc-

tion. Jamesville reservoir is located 14 miles below the source at elevation about 640. North of the Erie canal the stream flows out into the flat lands, at elevation about 400, which border Oneida lake for a width of several miles. Butternut creek is joined by Limestone creek near North Manlius at a point about  $1\frac{1}{2}$  miles above its junction with Chittenango creek. The Erie canal crosses the stream  $4\frac{1}{2}$  miles below Jamesville. Above the Erie canal crossing the slopes are steep and the tributaries are mostly short laterals. Jamesville reservoir has a capacity of 170,000,000 cubic feet. The water-surface area is 252 acres. At a distance of 2.35 miles below Jamesville there is a dam which diverts part of the stream to the Orrville feeder. This feeder is 2.25 miles in length.

#### BUTTERNUT CREEK AT JAMESVILLE

**Location.**—At the first bridge over Butternut creek above the head of the Orrville feeder and about  $1\frac{1}{2}$  miles below the village of Jamesville.

**Records available.**— July 25, 1907, to June 30, 1916.

**Drainage area.**— Fifty-three square miles.

**Gage.**—Standard chain gage secured to left-hand abutment of old bridge, read to tenths twice daily — at 8 A. M. and 4 P. M.

**Control.**—Gravel rift 400 feet below gage; changeable. The control was materially raised by deposit of gravel during flood about September 14, 1915.

**Discharge measurements.**—Made from downstream side of bridge, and by wading above and below gage.

**Extremes of discharge.**—Current period: Maximum stage recorded, 5.9 feet, January 31 at 4 P. M. and April 5 at 4 P. M.; discharge not available. Minimum stage recorded, 3.1 feet, March 5 and 7 at 8 A. M.; discharge not available.

1907–1916: Maximum stage recorded, 6.00 feet, September 14, 1915, at 8 A. M. and 4 P. M.; estimated discharge, 970 second-feet. Minimum stage recorded, 0.10 foot, 10 days in June and 10 days in July, 1909; discharge, 2 second-feet.

**Regulation.**—By the Jamesville reservoir for the water-supply of the Erie canal, capacity 170,000,000 cubic feet, water-surface area 252 acres. Daily flow affected by operation of mill about a mile upstream.

**Emendation.**—Owing to change of control estimated discharge previously published for September, 1915, is subject to revision.

Daily gage height, in feet, of BUTTERNUT CREEK NEAR JAMESVILLE, for the nine months ending June 30, 1916. Marie Brandt Brown, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1	3.55	4.25	3.55	5.3	5.6	3.5	5.45	4.1	3.95
2	3.7	4.4	3.55	5.75	5.55	3.35	5.65	4.2	3.95
3	3.8	4.1	3.6	5.55	4.95	3.3	5.9	4.1	4.65
4	4.05	4.15	3.55	5.55	5.05	3.3	5.75	4.2	4.2
5	4.0	4.05	3.55	5.65	4.9	3.15	5.55	4.3	4.55
6	4.1	4.05	3.45	5.35	5.05	3.3	5.7	4.3	4.45
7	4.65	4.15	3.55	4.7	4.95	3.2	5.65	4.25	4.3
8	4.15	4.05	3.55	4.9	5.1	3.7	5.5	4.0	4.3
9	4.1	4.65	3.65	5.1	5.25	3.5	5.25	4.15	4.2
10	4.05	3.85	3.45	5.1	4.95	3.55	5.1	4.3	4.05
11	3.9	3.95	3.45	5.05	4.9	3.65	4.9	4.25	4.05
12	3.95	3.8	3.7	5.05	4.65	3.45	4.95	4.1	4.2
13	3.85	3.85	3.8	4.9	4.4	3.45	5.0	4.0	5.15
14	3.8	4.0	3.9	4.95	4.45	3.55	5.1	4.15	5.3
15	3.85	3.95	4.0	5.2	4.35	3.55	4.95	4.65	5.45
16	4.05	3.9	4.2	5.25	4.35	3.6	4.85	4.75	5.75
17	4.0	3.95	4.4	5.0	4.4	3.5	4.9	5.0	5.65
18	4.15	4.05	4.25	4.85	4.5	3.5	4.95	4.3	4.65
19	4.15	3.95	4.35	4.8	4.6	3.6	5.0	3.75	4.3
20	4.15	3.95	4.1	4.55	4.6	3.65	4.95	3.55	3.55
21	4.15	4.05	4.15	4.8	4.3	3.6	4.85	3.45	3.5
22	4.1	4.1	4.15	5.05	4.25	3.9	4.65	3.45	3.35
23	4.05	4.05	3.9	5.25	4.45	4.0	4.5	3.5	3.35
24	4.0	3.9	4.1	5.05	4.65	3.8	4.45	3.5	3.35
25	3.95	3.95	4.55	5.1	5.0	4.45	4.35	3.4	3.3
26	4.0	3.8	4.85	5.25	4.55	5.05	4.3	3.35	3.35
27	4.0	4.0	4.95	5.4	4.1	5.6	4.75	3.4	3.25
28	4.0	3.95	5.3	5.3	3.85	5.2	4.1	3.3	3.35
29	3.9	3.85	4.6	5.5	3.85	4.9	4.1	3.65	3.35
30	3.85	3.65	4.5	5.65	.....	4.95	4.25	4.1	3.25
31	3.95	.....	4.55	5.85	.....	5.1	.....	4.1	.....

Owing to change of control, discharge estimates for the nine months ending June 30, 1916, are not yet available.

## LIMESTONE CREEK

### DESCRIPTION

The natural source of Limestone creek is on the slope of Tinselor hills near Erieville, Madison county, N. Y. In the construction of the Chenango canal, Tioughnioga creek was diverted and DeRuyter reservoir receives the drainage tributary to this stream above the point of diversion and also that from additional area tributary to Limestone creek, making a total area above the reservoir outlet of 18.8 square miles. The reservoir has a

capacity of 504,468,000 cubic feet and a surface area of about 1.0 square mile. The stored waters are discharged through Limestone creek during the canal navigation season. Water is diverted to a feeder by a dam below Manlius. The feeder is used as a water-power canal to supply several mills at Fayetteville, at which place there is a second diverting dam. The feeder enters Erie canal 1.2 miles below Fayetteville. Power is also developed on Limestone creek at Manlius and Edwards Falls. The headwaters of Limestone creek are at elevation 1,900 feet. DeRuyter reservoir is at elevation 1,286 feet. The fall of the stream is rapid in the first three miles below the reservoir, the elevation at the lower end of this reach at Delphi being 900 feet. From Delphi to Buellville the creek follows a winding course over a flat valley bottom averaging about one-half mile in width. The descent in 8 miles between these points is 150 feet. Between Buellville and Manlius, a distance of two miles, a fall of 200 feet occurs. This is mostly concentrated at Edwards Falls. The west, or Watervale branch of Limestone creek joins the main stream below Manlius. The precipitous descent of about 100 feet in a short distance occurs at this branch at Stone Quarry Falls. The drainage basin is shown on the Syracuse, Tully, Chittenango and Cazenovia sheets of the United States Geological Survey topographic maps.

#### **LIMESTONE CREEK AT MANLIUS**

**Location.**—At the Wilcox avenue bridge in the village of Manlius and above the entrance of the west or Watervale branch.

**Records available.**—Gage height, July 23, 1907, to June 30, 1916. Discharge, January 1, 1911, to September 30, 1915.

**Drainage area.**—Sixty-seven square miles. (U. S. G. S. topographic maps.)

**Gage.**—Standard chain gage attached to downstream side of bridge, read once daily to tenths.

**Control.**—Rapids about 600 feet below the gage, gravel and boulders, fairly permanent.

**Discharge measurements.**—Made from downstream side of the bridge and by wading below gage.

**Extremes of discharge.**—Current period: Maximum stage recorded, 6.0 feet, March 30 at 6:00 A. M.; discharge not available.

Minimum stage recorded, 2.5 feet, December 8 to 15; discharge not available.

1911-1916: Maximum stage recorded, 6.80 feet, March 28, 1914, at 8 A. M., April 1, 1914, at 7:30 A. M., and September 14, 1915, at 6 A. M.; discharge, estimated at approximately 1,000 second-feet. Minimum stage recorded, 1.90 feet, August 23, 1913; discharge, 6 second-feet.

**Regulation.**—Seasonal by De Ruyter reservoir, daily by hydro-electric plant one mile upstream.

**Diversion.**—Toughnioga creek a tributary of the Susquehanna is diverted to the DeRuyter reservoir and this territory above the point of diversion is included in the discharge area given above.

Daily gage height, in feet, of LIMESTONE CREEK AT MANLIUS, for the nine months ending June 30, 1916. J. R. Bixby, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	3.0	3.0	3.5	3.6	3.6	3.0	5.0	3.0	3.0
2.....	3.6	3.0	3.5	4.1	3.6	3.0	5.4	3.0	3.4
3.....	3.6	3.6	3.5	4.8	3.0	3.0	5.4	3.5	3.6
4.....	4.8	3.6	3.5	4.2	3.0	3.2	5.0	3.8	3.6
5.....	4.2	3.2	3.2	4.0	2.8	3.4	5.2	4.0	3.4
6.....	4.0	3.0	3.1	4.5	2.8	3.4	4.6	3.2	3.0
7.....	3.8	3.0	2.8	4.0	2.8	3.6	4.0	3.2	3.6
8.....	3.8	3.0	2.5	3.4	2.8	3.6	3.4	3.2	3.6
9.....	3.5	3.2	2.5	3.6	3.0	3.0	3.8	4.0	4.0
10.....	3.8	3.0	2.5	3.6	3.0	3.0	4.0	4.2	4.0
11.....	3.8	3.0	2.5	3.6	3.0	2.8	4.2	3.6	3.6
12.....	3.6	3.0	2.5	3.4	3.2	2.8	4.0	3.0	3.0
13.....	3.6	3.0	2.5	3.6	3.2	3.0	3.6	3.0	3.0
14.....	3.6	3.0	2.5	3.2	3.0	3.0	3.2	3.0	3.0
15.....	4.6	3.0	2.5	3.0	3.0	3.0	3.2	3.0	3.0
16.....	4.0	3.7	2.8	3.4	3.0	3.0	3.2	3.6	3.8
17.....	3.8	4.0	3.4	3.6	3.4	3.2	3.0	5.25	3.7
18.....	3.8	4.2	3.6	3.6	3.4	3.0	3.2	4.5	4.0
19.....	3.8	4.6	4.0	3.5	3.6	3.2	3.0	4.0	3.6
20.....	3.5	4.6	3.8	4.0	3.2	3.4	3.0	3.0	3.6
21.....	3.2	4.2	3.6	4.2	3.0	3.4	3.2	3.2	3.2
22.....	3.0	3.6	3.6	4.6	3.1	3.2	4.0	4.0	3.0
23.....	3.0	3.6	3.8	4.3	2.8	3.0	4.6	3.6	3.0
24.....	3.0	3.6	3.8	3.8	3.2	3.4	4.2	3.0	2.7
25.....	3.0	3.6	3.4	3.6	3.6	3.6	4.0	3.0	2.7
26.....	3.0	3.5	4.0	4.0	4.5	3.6	4.0	2.8	2.8
27.....	3.0	3.5	3.8	4.1	4.0	4.0	3.6	3.4	3.6
28.....	3.6	3.4	3.8	4.6	3.5	4.5	3.0	3.0	3.6
29.....	3.2	3.6	3.6	4.6	3.0	5.0	3.2	3.0	3.8
30.....	3.0	3.5	3.8	4.2	.....	5.7	3.0	2.7	3.0
31.....	3.0	.....	3.6	4.0	.....	5.2	.....	3.2	.....

Discharge estimates for the nine months ending June 30, 1916, not yet available.



## LIMESTONE CREEK AT FAYETTEVILLE

This station, established August 27, 1905, is located above the State dam at the head of the Erie canal feeder in Fayetteville. The gage is a staff secured to the right-hand abutment of the State dam and was read once daily — at noon. Zero of staff gage is at Elev. 429.53. Gage read and reduced elevations published, both to tenths.

Daily elevation of water-surface (B. C. Datum) of LIMESTONE CREEK ABOVE DAM AT FAYETTEVILLE, for the nine months ending June 30, 1916. Geo. Ebeling, Observer:

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	431.9	431.5	431.5	432.1	431.9	431.7	433.1	431.8	431.9
2.....	431.7	431.5	431.6	432.3	431.9	431.7	433.2	431.8	432.0
3.....	432.1	431.5	431.6	432.5	432.0	431.7	433.0	431.9	432.1
4.....	432.5	431.5	431.7	432.5	432.1	431.8	432.5	431.9	432.3
5.....	433.1	431.6	431.6	432.4	432.0	431.9	432.4	432.1	432.3
6.....	431.9	431.6	431.5	432.3	431.9	431.9	432.1	431.9	432.3
7.....	431.8	431.5	431.6	432.1	431.9	431.9	431.9	431.5	432.1
8.....	431.8	431.5	431.7	432.3	431.9	431.9	431.5	431.3	432.1
9.....	431.7	431.6	431.9	432.4	431.9	431.9	431.5	431.1	432.0
10.....	431.8	431.5	431.9	432.3	431.9	431.9	431.8	430.9	431.9
11.....	431.7	431.5	432.0	432.3	431.9	431.9	431.9	430.7	431.9
12.....	432.1	431.6	432.1	432.2	431.9	431.9	432.0	430.9	431.8
13.....	432.3	431.6	432.0	432.1	431.8	431.9	432.2	430.7	431.9
14.....	432.2	431.7	431.9	431.9	431.8	431.9	432.3	430.7	431.9
15.....	432.4	431.6	431.9	431.5	431.9	431.9	432.2	431.1	432.1
16.....	432.2	431.6	432.0	431.5	432.0	431.9	432.0	431.3	432.1
17.....	432.0	431.7	432.1	431.5	432.0	431.9	431.9	432.9	431.9
18.....	431.9	431.7	431.9	431.5	432.0	431.9	431.9	432.6	431.9
19.....	432.1	431.6	432.1	431.6	431.9	431.9	431.9	432.5	431.7
20.....	431.9	431.6	431.9	431.6	431.8	431.9	431.8	432.4	431.9
21.....	431.7	431.5	431.9	431.7	431.8	431.9	432.0	432.3	431.9
22.....	431.8	431.6	432.1	431.7	431.9	432.0	432.2	432.1	431.7
23.....	431.7	431.7	431.9	431.8	431.7	432.1	432.3	432.1	431.9
24.....	431.6	431.8	432.1	431.9	431.7	432.2	432.2	431.9	431.7
25.....	431.8	431.8	432.2	432.0	431.8	432.3	432.1	431.9	431.5
26.....	431.7	431.7	432.3	432.1	431.9	432.3	432.0	431.9	431.3
27.....	431.6	431.7	432.2	432.2	431.9	432.5	432.0	431.7	431.5
28.....	431.6	431.6	432.2	432.1	431.9	433.1	432.0	431.9	431.9
29.....	431.7	431.5	432.3	432.1	431.8	433.78	431.9	431.7	431.9
30.....	431.6	431.5	432.1	432.0	.....	433.3	431.8	431.5	431.5
31.....	431.5	.....	432.0	432.0	.....	433.38	.....	431.7	.....

## LIMESTONE FEEDER AT FAYETTEVILLE

This station, established August 27, 1905, is located at the head of the Limestone feeder at Fayetteville.

The record is of the water-surface below the gates supplying the feeder from Limestone creek. Elevations are obtained by use of a reference point. Readings are taken each noon and the reduced elevations published both to the nearest tenth foot.

Daily elevation of water-surface (B. C. Datum) of LIMESTONE FEEDER AT FAYETTEVILLE, for the nine months ending June 30, 1916. Geo. Ebeling, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	429.0	428.3	428.6	424.3	424.6	424.8	425.1	424.6	427.9
2.....	429.3	428.4	428.7	424.4	424.6	424.8	425.1	424.9	428.1
3.....	429.4	428.4	428.6	424.5	424.6	424.8	425.2	424.9	427.9
4.....	429.3	428.5	428.5	424.7	424.6	424.8	425.3	424.9	427.7
5.....	429.4	428.6	428.3	424.6	424.6	424.8	425.3	425.1	427.7
6.....	429.3	428.7	428.1	424.5	424.6	424.8	425.3	425.3	427.5
7.....	429.4	428.8	428.5	424.4	424.6	424.8	425.3	425.5	427.7
8.....	429.3	428.7	427.1	424.4	424.6	424.8	425.3	426.1	427.7
9.....	429.2	428.7	426.7	424.3	424.6	424.8	425.2	426.3	427.6
10.....	429.3	428.7	426.5	424.4	424.6	424.8	425.3	426.5	427.7
11.....	429.3	428.8	426.1	424.4	424.6	424.8	425.3	426.7	427.7
12.....	429.5	428.7	425.8	424.4	424.6	424.8	425.3	427.1	427.9
13.....	429.6	428.6	425.7	424.4	424.6	424.8	425.3	427.3	427.9
14.....	429.6	428.6	425.3	424.4	424.6	424.8	425.4	427.3	427.9
15.....	429.7	428.7	425.1	424.4	424.6	424.8	425.4	427.5	427.9
16.....	ab	428.7	425.1	424.4	424.7	424.8	425.3	427.7	427.8
17.....	ab	429.7	424.3	424.4	424.8	424.8	425.3	428.1	427.9
18.....	ab	428.8	424.3	424.4	424.8	424.8	425.3	428.2	428.1
19.....	ab	428.8	424.3	424.4	424.8	424.8	425.1	427.7	428.0
20.....	428.4	428.7	424.3	424.4	424.8	424.8	425.1	427.2	428.1
21.....	428.4	428.7	424.3	424.5	424.8	424.9	425.1	427.3	428.1
22.....	428.5	428.8	424.3	424.5	424.8	425.1	425.1	427.3	427.7
23.....	428.4	428.8	424.3	424.5	424.8	425.1	425.1	427.7	427.7
24.....	428.4	428.7	424.3	424.5	424.8	425.1	425.1	427.7	427.9
25.....	428.5	428.7	424.3	424.5	424.8	424.9	425.1	427.9	427.7
26.....	428.4	428.8	424.3	424.5	424.8	424.8	425.1	428.1	427.9
27.....	428.5	428.7	424.3	424.4	424.8	424.7	425.1	428.1	428.0
28.....	428.5	428.6	424.3	424.5	424.8	424.9	425.1	428.1	428.1
29.....	428.4	428.6	424.3	424.5	424.8	425.0	425.1	428.1	427.9
30.....	428.5	428.7	424.3	424.5	424.8	425.1	424.6	428.1	428.1
31.....	428.3	.....	424.5	424.5	.....	425.1	.....	428.1	.....

a No record.

b Gate destroyed.

## SALMON RIVER DRAINAGE BASIN

### DESCRIPTION

Salmon river rises in the southwestern part of Lewis county, N. Y., and flows southward and then northward, entering Lake Ontario near Port Ontario. Its drainage area comprises about 285 square miles. The topography is generally rolling in character and the soil is sandy, rock lying near the surface in the upper part of the basin, where there are extensive tracts of virgin forest.

A gaging station has been maintained on this river near Pulaski from 1900 to 1908 and from 1910 to 1914, inclusive, and at Stillwater near Altmar in 1911, 1912 and 1913.

## ORWELL BROOK

### ORWELL BROOK NEAR ALTMAR

**Location.**—At highway bridge  $1\frac{1}{2}$  miles by road northwest of Altmar, Oswego county, and  $\frac{1}{8}$  mile above the confluence of Orwell brook with Salmon river.

**Records available.**—June 23, 1911, to June 30, 1916.

**Drainage area.**—22.1 square miles. (Measured on U. S. Geological Survey topographic maps.)

**Gage.**—Standard chain, attached to downstream side of bridge.

**Control.**—Composed of small stone and gravel.

**Discharge measurements.**—Made by wading at low stages and from bridge at high stages.

**Winter flow.**—Discharge relation probably affected by ice.

**Extremes of discharge.**—Current period: Maximum stage recorded, 5.0 feet at 5:30 P. M., May 17; discharge, 497 second-feet. Minimum stage recorded, 1.85 feet at 8 A. M. and 5 P. M., October 1; discharge, 11 second-feet.

1911–1915: Maximum stage recorded, 5.5 feet at 6 P. M., April 7, 1912; discharge, 610 second-feet. Minimum stage recorded, 1.65 feet, August 6, 7, 14, 22, 23 and 24, inclusive, and September 5, 1911; discharge, 5 second-feet.

**Accuracy.**—The discharge rating curve is well defined and estimates are good.

**Coöperation.**—Gage observer employed by the Niagara, Lockport & Ontario Power Co. of Niagara Falls, N. Y. Station established and maintained by the United States Geological Survey in coöperation with the State Conservation Commission.

Discharge measurements of ORWELL BROOK NEAR ALTMAR, during the nine months ending June 30, 1916

DATE	Made by	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>
Nov. 3 a.....	E. D. Burchard.....	1.99	16.3
Nov. 3 a.....	E. D. Burchard.....	1.99	16.4

a Measurement made by wading 50 ft. below gage.

Daily gage height, in feet, of ORWELL BROOK NEAR ALTMAR, for the nine months ending June 30, 1916. Mrs. A. G. White, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	1.85	2.05	2.55	3.5	3.9	4.9	4.4	2.35	2.25
2.....	2.10	2.05	2.48	3.45	3.25	4.6	4.3	2.35	2.20
3.....	2.05	1.98	2.42	3.0	2.90	4.6	3.75	2.40	2.88
4.....	2.0	1.95	2.52	2.95	2.90	4.5	3.5	2.65	2.80
5.....	2.18	2.02	2.40	3.1	2.88	.....	3.2	2.58	2.50
6.....	2.55	1.95	2.35	3.3	2.68	.....	3.05	2.38	2.40
7.....	2.30	1.95	2.28	3.0	2.45	.....	2.80	2.38	2.22
8.....	2.12	1.95	2.32	2.95	2.88	.....	2.75	2.30	2.20
9.....	2.12	1.95	2.28	3.0	2.75	.....	2.80	2.35	2.40
10.....	2.10	1.95	2.32	3.05	2.75	.....	2.85	2.25	2.45
11.....	2.05	1.95	2.40	3.1	3.0	.....	2.80	2.22	2.38
12.....	1.95	1.95	2.45	3.15	3.0	.....	3.3	2.12	2.95
13.....	1.95	1.95	2.35	3.4	2.98	.....	3.1	2.10	2.58
14.....	1.95	1.95	2.40	3.6	3.15	.....	3.05	2.10	2.32
15.....	2.00	2.02	2.40	4.6	3.1	.....	3.15	2.18	2.22
16.....	1.95	2.25	2.45	4.1	2.92	.....	3.2	2.45	2.50
17.....	1.90	2.20	2.58	4.2	2.85	.....	3.4	4.9	2.68
18.....	1.90	2.18	2.90	4.3	2.85	.....	3.4	4.0	2.50
19.....	2.38	2.45	3.3	4.5	2.92	.....	3.15	3.7	2.45
20.....	2.35	3.3	3.3	4.7	2.95	.....	2.80	3.05	2.60
21.....	2.30	2.80	3.2	4.5	2.90	.....	2.92	2.82	2.55
22.....	2.20	2.50	3.15	4.8	2.85	.....	3.2	2.60	2.42
23.....	2.15	2.55	3.0	5.1	2.80	.....	3.2	2.75	2.25
24.....	2.10	2.55	2.90	4.8	2.75	.....	2.92	2.78	2.25
25.....	2.05	2.50	2.98	4.3	3.35	.....	2.80	2.60	2.42
26.....	2.00	2.48	3.1	3.8	3.8	3.15	2.80	2.42	2.35
27.....	2.00	2.90	3.4	4.0	4.6	3.7	2.75	2.35	2.25
28.....	1.95	3.1	3.2	4.7	5.4	3.4	2.60	2.30	2.22
29.....	1.95	2.95	3.1	3.85	5.2	4.1	2.50	2.30	2.15
30.....	2.12	2.72	2.95	3.3	.....	4.3	2.42	2.35	2.08
31.....	2.10	.....	3.3	3.4	.....	4.4	.....	2.38	.....

NOTE.—Discharge relation probably affected by ice, December 10 to 18 and December 28 to about March 31.

Daily discharge, in second-feet, of ORWELL BROOK NEAR ALTMAR, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1	11	20	61				368	42	34
2	23	20	54				347	42	30
3	20	16	48				291	47	102
4	17	15	58				198	72	91
5	29	18	47				149	64	56
6	61	15	42				126	45	47
7	38	15	36				91	45	32
8	24	15	40				84	38	30
9	24	15	36				91	42	47
10	23	15	32				98	34	52
11	20	15	29				98	32	45
12	15	15	26				165	24	112
13	15	15	23				134	23	64
14	16	16	21				126	22	40
15	17	18	19				142	29	32
16	15	34	18				149	52	56
17	13	30	20				181	475	70
18	13	29	30				181	285	56
19	46	52	165				142	228	52
20	42	165	165				91	125	66
21	38	91	140				108	94	61
22	30	56	142				149	66	49
23	26	61	119				149	84	34
24	23	61	105				108	88	34
25	20	56	116				91	66	49
26	17	54	134				91	49	42
27	17	105	181				84	42	34
28	15	134	142				66	38	32
29	15	112	105				56	36	36
30	24	81	91				49	42	22
31	23		84					45	
Mean	23.5	45.4	75.5				138	78.3	50.1

NOTE.—Discharge relation probably affected by ice, December 16 to 18 and December 28 to about March 31. Daily discharge December 10 to 18 and 28 to 31 is approximate. Station discontinued June 30, 1916.

Monthly discharge of ORWELL BROOK NEAR ALTMAR, for the nine months ending June 30, 1916

(Drainage area, 22.1 square miles)

MONTHS	DISCHARGE IN SECOND-FEET				RUN-OFF	
	Maximum	Minimum	Mean	Per square mile	Depth in inches on drainage area	Accuracy
October	61	11	23.5	1.06	1.22	B
November	165	15	45.4	2.05	2.29	B
December	181	18	75.5	3.42	3.94	D
January						
February						
March						
April	368	40	138	6.24	6.96	B
May	475	23	78.3	3.54	4.06	B
June	112	22	50.1	2.27	2.53	B

**BLACK RIVER DRAINAGE BASIN****BLACK RIVER****DESCRIPTION**

Black river rises in the western part of Hamilton county, N. Y., flows southwestward across Herkimer county into Oneida county, turns near Forestport and runs somewhat west of north through Lewis county to eastern Jefferson county and then flows westward to Black River bay, at the eastern extremity of Lake Ontario. Its total drainage area is 1,930 square miles. The upper part of the basin is very rugged and mountainous, contains a large number of lakes and is in a part of the Adirondack forest.

The mean annual precipitation is about 40 inches, ranging from 55 inches in the extreme headwaters to perhaps 30 inches near Lake Ontario. The winters are generally quite severe and the stream flow is affected by ice for periods of several months.

The regimen of the river is controlled by storage on its upper tributaries (including Beaver river at Beaver River), a series of reservoirs on the headwaters of Moose river and additional reservoirs at Forestport and on the headwaters of the main river.

Water is diverted from Black river through Forestport feeder to supply the Black River canal at Boonville. A portion of this diverted water flows northward from Boonville and enters Black river again at Lyons Falls; the remainder flows southward through the Black River canal and enters the Erie canal at Rome.

**BLACK RIVER NEAR BOONVILLE**

**Location.**—At highway bridge about 2 miles northeast of Boonville, Oneida county, equal distance by river downstream from Hawkinsville, and about 1 mile above the mouth of Sugar river.

**Records available.**—February 16, 1911, to June 30, 1916.

**Drainage area.**—303 square miles. (Measured on U. S. Geological Survey topographic maps.)

**Gage.**—Standard chain, fastened to the downstream side of the bridge. A staff gage, graduated from 6 to 13 feet, is fastened

to the downstream right-hand abutment and is used for high-water readings.

**Control.**— Rough and full of boulders; permanent.

**Discharge measurements.**— At high stages, from a cable about one-half mile above the gage; at low stages, by wading at a section near the cable.

**Winter flow.**— Discharge relation affected by ice. Flow determined by frequent discharge measurements and climatologic records.

**Regulation and diversion.**—The State dam at Forestport, about 8 miles upstream, provides a storage reservoir with a capacity of about 2,000,000,000 cubic feet. Water is diverted from this reservoir during the navigation season through the Forestport feeder flowing west to a basin in Boonville. The Black River canal flows north from this basin, entering the Black river at the foot of Lyons falls. A spillway from the basin overflows into Mill creek, a tributary of Black river. Water flowing through these two channels returns to the river below the gaging station, thus passing around it. The Black River canal also flows south from Boonville, passing out of the Black river drainage and entering the summit level of the Erie canal at Rome. Occasional discharge measurements have been made at three points to indicate the distribution of the diverted water. The water entering Boonville through the Forestport feeder has been measured at the highway bridge near Sperry Hill, about one mile northeast of Boonville. The water flowing north from the basin through the Black River canal has been measured at the highway bridge just below the lock into this canal near the railroad station. The water flowing south from the basin has been measured at a private farm bridge about one mile southeast of Boonville. During September, 1915, two water-stage recorders were installed on Black River canal, flowing south; and during October, 1915, two more were installed on the Forestport feeder. Continuous records of flow were obtained and are published in this report as for separate stations.

**Extremes of discharge.**— Current period: Maximum stage recorded, 9.45 feet at 8 A. M., May 18; discharge, 4,750 second-feet. Minimum stage recorded, 3.70 feet at 4 P. M., October 3 and 8 A. M., November 15; discharge, 97 second-feet.

1911-1916: Maximum stage recorded, approximately 12.5 feet during the night of March 28, 1913, determined by leveling from flood-marks; discharge, approximately 10,000 second-feet. Minimum stage recorded, 3.0 feet at 8 A. M., September 29 and November 8, 1913, and October 8, 1914; discharge, 27 second-feet.

**Accuracy.**—A well-defined discharge rating curve has been developed and estimates as published are good.

**Coöperation.**—Established and maintained by the United States Geological Survey in coöperation with the State Conservation Commission.

Daily gage height, in feet, of BLACK RIVER NEAR BOONVILLE, for the nine months ending June 30, 1916. W. D. Charbonneau, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	4.2	5.15	5.5	6.1	7.2	6.3	7.8	7.0	4.95
2.....	3.9	5.15	5.6	6.7	7.0	5.9	8.2	7.1	4.6
3.....	3.75	5.0	5.35	7.1	6.9	5.8	8.0	7.3	4.25
4.....	3.8	5.05	5.0	6.8	6.6	5.6	7.8	7.4	4.4
5.....	4.55	5.15	5.0	6.7	6.2	5.6	7.4	7.5	4.05
6.....	6.3	5.2	4.85	6.7	6.1	5.6	6.9	7.2	4.2
7.....	7.2	5.1	4.8	6.6	5.8	5.5	6.8	6.4	4.1
8.....	5.9	4.8	4.85	6.4	5.6	5.6	6.5	5.8	4.3
9.....	5.7	4.55	4.75	6.2	5.45	5.4	6.3	5.7	4.7
10.....	5.25	4.4	4.65	6.1	5.6	5.35	6.2	5.6	4.65
11.....	4.85	4.3	4.6	6.1	5.45	5.3	6.1	5.5	4.45
12.....	4.5	4.25	4.7	6.5	5.45	5.4	6.2	5.45	4.6
13.....	4.2	4.1	4.85	6.8	5.4	5.35	6.5	5.4	4.5
14.....	4.25	3.85	4.9	6.4	5.4	5.2	6.9	5.3	4.35
15.....	4.2	3.75	5.5	6.3	5.25	5.25	7.1	5.45	4.25
16.....	4.3	4.05	5.9	5.9	5.35	5.2	7.4	7.7	4.7
17.....	4.3	4.2	6.3	5.9	5.6	5.1	7.8	9.0	5.7
18.....	4.25	4.35	6.0	5.7	5.5	5.0	7.7	9.3	6.3
19.....	4.55	4.4	5.7	5.9	5.6	5.1	7.6	8.6	6.7
20.....	5.0	4.6	5.5	5.8	5.5	5.1	7.5	7.6	6.4
21.....	5.25	5.05	5.45	6.0	5.5	5.05	7.7	6.8	6.6
22.....	5.2	5.4	5.25	6.5	5.6	5.3	8.1	6.5	6.4
23.....	5.2	5.3	5.25	6.7	5.45	5.2	8.4	6.4	6.1
24.....	5.15	5.2	5.2	6.7	5.5	5.1	8.2	6.6	5.7
25.....	5.1	5.05	5.6	6.8	5.6	5.15	7.8	6.6	5.4
26.....	5.05	4.9	6.1	6.8	6.9	5.15	7.7	6.1	5.2
27.....	5.2	4.9	6.5	6.7	7.1	5.5	7.7	5.4	5.05
28.....	5.25	4.85	6.1	7.7	6.9	6.4	7.4	5.35	4.8
29.....	5.1	4.8	5.2	7.9	6.7	6.6	7.2	5.3	4.7
30.....	5.1	4.85	4.55	7.8	.....	6.9	7.1	5.1	4.4
31.....	5.2	.....	4.95	7.4	.....	7.4	.....	5.1	.....

NOTE.—Discharge relation affected by ice, December 29 to January 30 and February 10 to March 25, both inclusive.



Daily discharge, in second-feet, of BLACK RIVER NEAR BOONVILLE, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	184	470	430	795	1,940	990	2,820	1,740	390
2.....	127	470	480	1,210	1,740	785	3,110	1,840	275
3.....	104	410	558	1,460	1,640	630	2,860	2,050	194
4.....	111	430	410	1,210	1,370	548	2,620	2,160	237
5.....	262	470	610	1,060	1,060	555	2,160	2,270	154
6.....	1,140	490	352	1,060	990	558	1,640	1,940	184
7.....	1,940	450	335	920	795	535	1,540	1,210	164
8.....	858	885	852	858	880	585	1,290	795	205
9.....	735	262	320	735	630	470	1,140	735	305
10.....	512	227	290	680	680	450	1,060	680	290
11.....	352	205	275	630	605	430	990	630	238
12.....	250	194	305	855	535	470	1,060	605	275
13.....	184	164	262	1,060	470	450	1,290	590	250
14.....	194	119	370	795	430	390	1,640	535	216
15.....	184	104	680	785	410	410	1,940	605	194
16.....	205	154	855	512	430	410	2,160	2,500	305
17.....	305	184	1,140	512	512	352	2,420	4,140	735
18.....	194	216	920	450	512	320	2,500	4,540	1,140
19.....	262	227	735	512	535	352	2,380	2,620	1,460
20.....	410	275	630	490	490	352	2,270	2,380	1,210
21.....	512	430	605	558	450	335	2,500	1,540	1,370
22.....	490	580	512	795	410	430	2,980	1,290	1,210
23.....	490	535	512	920	390	390	3,360	1,210	990
24.....	470	490	490	920	410	352	3,110	1,370	735
25.....	450	430	680	795	430	370	2,620	1,370	580
26.....	430	870	990	795	1,870	470	2,500	590	490
27.....	490	870	1,290	1,060	1,540	630	2,500	580	430
28.....	512	852	990	1,540	1,460	1,210	2,160	558	335
29.....	450	835	450	2,050	1,210	1,370	1,940	535	305
30.....	450	352	227	2,270	.....	1,640	1,840	450	227
31.....	490	.....	820	2,460	.....	2,160	.....	450	.....
Mean.....	440	337	568	981	632	622	2,140	1,480	508

NOTE.— Discharge relation affected by ice, December 29 to January 30 and February 10 to March 25, both inclusive. Daily discharge given in these periods is approximate.

Monthly discharge of BLACK RIVER NEAR BOONVILLE, for the nine months ending June 30, 1916

[Drainage area, 803 square miles]

MONTH	DISCHARGE IN SECOND-FEET			Accuracy
	Maximum	Minimum	Mean	
October.....	1,940	104	440	A
November.....	580	104	337	A
December.....	1,290	227	568	A
January.....	2,270	450	981	B
February.....	1,940	390	832	B
March.....	2,160	320	622	B
April.....	3,360	990	2,140	A
May.....	4,540	450	1,480	A
June.....	1,460	154	503	A

Discharge measurements of BLACK RIVER NEAR BOONVILLE, during the nine months ending June 30, 1916

DATE	Made by	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>
Dec. 29.....	A. H. Davison.....	c 5.19	441
Jan. 8 <i>a</i> .....	A. H. Davison.....	c 5.42	820
Jan. 20 <i>b</i> .....	A. H. Davison.....	c 5.77	466
Feb. 2 <i>a</i> .....	A. H. Davison.....	c 5.99	1,750
Feb. 10.....	A. H. Davison.....	d 5.58	680
Feb. 17.....	A. H. Davison.....	c 5.37	527
Feb. 23.....	A. H. Davison.....	c 5.45	388
Mar. 4.....	C. C. Covert.....	c 5.64	581
Mar. 16.....	A. H. Davison.....	c 5.22	412
Mar. 27.....	A. H. Davison.....	5.18	484
May 8.....	A. H. Davison.....	5.77	810
May 27.....	A. H. Davison.....	5.52	635

*a* Measurement made under partial ice cover at cable section.

*b* Measurement made under complete ice cover, 15 ft. above cable.

*c* Discharge relation affected by ice.

*d* Discharge relation slightly affected by ice.

#### FORESTPORT FEEDER NEAR BOONVILLE

**Location.**— Slope station at the lower end of feeder, above the point where it enters the basin at Boonville. A spillway takes water from the feeder just below gage No. 2, discharging into Mill creek and entering Black river below the Boonville gaging station. Other spillways above Hawkinsville discharge into Black river above the gaging station. There are no spillways between gage No. 1 and gage No. 2. The sum of this record and the record for the Black river near Boonville indicates the total run-off of the Black river basin.

**Records available.**— Occasional discharge measurements, 1900 and 1905 to 1915. Continuous record, October 30, 1915, to June 30, 1916.

**Gages.**— Two Gurley 7-day water-stage recorders with natural scale for gage heights. The float wells are 1½ by 2 feet, inside dimensions, the bottoms of which are about 1½ feet below the normal elevation of water-surface in the canal. They are 2.53 miles apart.

Gage No. 1 is located at the downstream end of the left abutment of the steel highway bridge in the village of Hawkinsville.

Gage No. 2 is located on the left bank just below a farm bridge, about 1 mile above the basin at Boonville.

These gages and the two gages in the Black river canal flowing south near Boonville, are all set at the same datum.

**Discharge measurements.**— Made from the steel highway bridge at gage No. 1 in Hawkinsville.

**Regulation.**— Flow in the feeder is regulated at the outlet of Forestport reservoir.

**Winter flow.**— There is no flow in the canal during frozen season.

**Accuracy.**— Conditions for meter measurements are very good and estimates published should be good.

**Coöperation.**— Established and maintained by the United States Geological Survey in coöperation with the State Conservation Commission.

Daily discharge, in second-feet, of FORESTPORT FEEDER NEAR BOONVILLE, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1		296							293
2		305							325
3		298							315
4		297							326
5		307							331
6		303							311
7		306							300
8		305							301
9		309							302
10		310							207
11		317							290
12		316							295
13		320							303
14		314							305
15		328							247
16		332							305
17		330							272
18		327							262
19		330							288
20		346							296
21		304							290
22		289							282
23		275							263
24		322							253
25		332							253
26		333							249
27		292							254
28		279							257
29		340							255
30	280	302							248
31	294								

NOTE.— Mean daily discharge computed from the Chezy formula. Mean daily slope determined from gages Nos. 1 and 2 and the coefficient determined from the discharge measurements. This coefficient is variable, depending on accretive growth in the canal.

Monthly discharge of FORESTPORT FEEDER NEAR BOONVILLE, for the nine months ending June 30, 1916

MONTH	DISCHARGE IN SECOND-FEET			Accuracy
	Maximum	Minimum	Mean	
November.....	346	275	312	A
December.....	.....	.....	.....	.....
January.....	.....	.....	.....	.....
February.....	.....	.....	.....	.....
March.....	.....	.....	.....	.....
April.....	.....	.....	.....	.....
May.....	.....	.....	.....	.....
June.....	326	248	287	A

Discharge measurements of FORESTPORT FEEDER NEAR BOONVILLE, during the nine months ending June 30, 1916

DATE	Made by	GAGE HEIGHT		Discharge
		Gage No. 1	Gage No. 2	
		<i>Feet</i>	<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 3.....	O. W. Hartwell.....	.....	.....	291
Oct. 21.....	A. H. Davison.....	.....	.....	307
Nov. 1.....	E. D. Burchard.....	3.567	2.068	295
Nov. 1.....	E. D. Burchard.....	3.586	2.081	285
Nov. 2.....	E. D. Burchard.....	3.610	2.078	298
Nov. 2.....	E. D. Burchard.....	3.607	2.055	296
Nov. 19.....	E. D. Burchard.....	3.611	2.123	332
Nov. 19.....	E. D. Burchard.....	3.614	2.170	327
Nov. 30.....	E. D. Burchard.....	3.312	1.920	287
Nov. 30.....	E. D. Burchard.....	3.298	1.909	282
Nov. 30.....	E. D. Burchard.....	3.290	1.899	280
June 9.....	O. W. Hartwell.....	3.348	1.817	295
June 23.....	O. W. Hartwell.....	3.048	1.619	252
June 23.....	M. J. Maguire.....	3.042	1.614	252
June 24.....	M. J. Maguire.....	2.998	1.701	246
June 24.....	M. J. Maguire.....	3.008	1.719	249

### BLACK RIVER CANAL, FLOWING SOUTH, NEAR BOONVILLE

**Location.**—Slope station in summit level of Black River canal near Boonville, Oneida county. This record indicates the amount of water being diverted from the Black river into the Erie canal or the Barge canal.

**Records available.**—Occasional discharge measurements, 1900 and 1905 to 1915; continuous record, September 16, 1915, to June 30, 1916.

**Gages.**—Two Gurley 7-day water-stage recorders with natural scale for gage heights. The float wells are 1½ by 2 feet inside dimensions, the bottoms of which are about 1½ feet below the

normal elevation of water-surface in the canal. They are 1.81 miles apart.

Gage No. 1 is located on the right bank (opposite tow-path) about 50 feet downstream from the collector's office in Boonville.

Gage No. 2 is located on the right bank (opposite tow-path) about 300 yards above lock 70, and about 50 yards above the spillway from the canal into Lansingkill.

These two gages and the two gages on the Forestport feeder near Boonville are all set at the same datum.

**Discharge measurements.**—Made from the steel highway bridge in the village of Boonville about 150 yards below gage No. 1.

**Regulation.**—Flow in the canal is regulated by the operation of the spillway and sluice-gates at lock 70, and by the discharge of Forestport feeder into the basin at Boonville.

**Winter flow.**—There is no flow in the canal during the frozen season.

**Coöperation.**—Established and maintained by the United States Geological Survey in coöperation with the State Conservation Commission.

Discharge measurements of BLACK RIVER CANAL, FLOWING SOUTH, NEAR BOONVILLE, during the nine months ending June 30, 1916

DATE	Made by	GAGE HEIGHT		Discharge
		Gage No. 1	Gage No. 2	
		<i>Feet</i>	<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 3.....	O. W. Hartwell.....	1.705	1.095	249.5
Oct. 3.....	O. W. Hartwell.....	1.696	1.079	246.7
Oct. 21.....	A. H. Davison.....	1.55	.....	239
Oct. 22.....	O. W. Hartwell.....	1.48	1.00	212
Oct. 22.....	E. D. Burchard.....	1.48	1.00	224
Oct. 27.....	E. D. Burchard.....	1.68	1.20	262
Oct. 27.....	A. H. Davison.....	1.68	1.20	270
Oct. 27.....	E. D. Burchard.....	1.655	1.16	260
Oct. 27.....	A. H. Davison.....	1.655	1.15	267
Nov. 18.....	E. D. Burchard.....	1.626	1.236	243
Nov. 29.....	E. D. Burchard.....	1.670	1.199	295
Nov. 29.....	E. D. Burchard.....	1.663	1.166	298
Nov. 29.....	E. D. Burchard.....	1.653	1.188	295
June 9.....	O. W. Hartwell.....	1.463	1.160	233
June 23.....	O. W. Hartwell.....	1.232	.957	182.8
June 23.....	M. J. Maguire.....	1.272	1.120	178
June 24.....	M. J. Maguire.....	1.252	.932	195
June 24.....	M. J. Maguire.....	1.245	.932	193

NOTE.—Mean daily discharge computed from the Chezy formula. Mean daily slope determined from gages Nos. 1 and 2 and the coefficient determined from the discharge measurements. This coefficient is variable, depending on aquatic growth in the canal.

Daily discharge, in second-feet, of BLACK RIVER CANAL, FLOWING SOUTH, NEAR  
BOONVILLE, for the ten months ending June 30, 1916

DAY	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.			235							220
2.			242							239
3.		239	252							265
4.		284	242							258
5.		236	237							268
6.		231	249							264
7.		231	242							290
8.		226	241							226
9.		218	236							216
10.		219	248							216
11.		219	246							220
12.		215	244							208
13.		227	245							199
14.		233	252							213
15.		233	289							247
16.		240	258							215
17.		241	252							186
18.	200	231	248							222
19.	198	249	275							242
20.	195	241	266							224
21.	187	236	237							195
22.	184	229	226							196
23.	183	222	241							203
24.	178	223	264							196
25.	169	224	254							195
26.	176	227	258							217
27.	196	239	267							200
28.	196	234	254							194
29.	192	220	296							193
30.	196	226	323							
31.		232								

Monthly discharge of BLACK RIVER CANAL, FLOWING SOUTH, NEAR BOONVILLE, for  
the nine months ending June 30, 1916

MONTH	DISCHARGE IN SECOND-FEET			Accuracy
	Maximum	Minimum	Mean	
October	249	215	230	A
November	328	226	254	A
December				
January				
February				
March				
April				
May				
June	268	186	220	A

**BLACK RIVER NEAR FELTS MILLS**

This station, originally established by the United States Geological Survey, August 29, 1902, is now maintained by this Department. During the summer of 1910, the timber dam formerly used, was replaced by a masonry dam located a few rods downstream. The wood-pulp mill has been in operation since 1907.

**Location.**—Near the village of Felts Mills at the dam of the LeFebvre Paper Company, formerly owned by the Black River Traction Company. The dam is 9 miles upstream from Watertown and 7 miles upstream from the old Huntingtonville gaging station, formerly maintained on this stream.

**Records available.**—August 29, 1902, to June 30, 1916.

**Drainage area.**—1,851 square miles.

**Gages.**—The gage above the dam, located on the left bank of the stream about 100 feet upstream from the wheel racks and about the same distance above the crest of the dam, is a vertical enameled steel staff attached securely to the concrete wall, and steps provide access to the gage for reading. Lower gage is an enameled steel staff gage attached to a pile at the tail-race exit.

**Control.**—Dam crest and power-wheels. The main crest of the dam is 300.45 feet long and 3.75 feet in width with a slope on the downstream face of about 1 on 1. There are two wings, one about 47 feet long and about 2.7 feet higher than the main crest, the other about 140 feet long and about 3 feet higher than the main crest. Flash-boards are used on the main crest. The mill contains four 72-in. and one 45-in. Smith turbines. A record is kept of the hours run, gate opening and head on each wheel.

**Discharge measurements.**—Discharge over the spillway is calculated by means of the weir formula using coefficients derived from experiments of the United States Geological Survey for a dam of similar cross-section. Discharge through the wheels is based on ratings furnished by the Paper Company.

**Extremes of discharge.**—Current period: Maximum stage recorded, May 19, 5 P. M., 23,100 second-feet. Minimum stage recorded, November 9, at 7 A. M., 1,210 second-feet.

1902–1916: Maximum stage recorded, March 28, 1913, at 5 P. M., estimated as 32,500 second-feet. Minimum stage recorded, August 26, 1907, 10 second-feet, due to artificial interruption of flow to fill pond at Herring.

Daily discharge, in second-feet, of BLACK RIVER NEAR FELTS MILLS, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	1,360	2,570	3,540	4,680	13,500	4,910	13,120	9,600	3,500
2.....	1,320	2,290	2,960	4,680	12,030	4,240	19,600	8,420	3,260
3.....	1,390	1,970	2,800	4,680	12,040	3,700	17,810	8,260	3,510
4.....	1,850	1,790	2,880	4,900	9,960	3,240	16,370	8,420	4,740
5.....	1,740	1,690	2,000	6,080	9,230	3,010	14,090	8,260	4,620
6.....	3,020	1,490	2,210	7,480	7,570	3,080	12,210	7,930	4,290
7.....	4,760	1,680	2,000	7,020	6,670	3,080	10,960	7,050	3,510
8.....	4,390	1,580	2,350	7,180	5,560	2,930	9,780	6,620	3,100
9.....	3,520	1,250	2,500	6,010	4,690	2,860	8,760	5,500	3,020
10.....	1,840	1,450	1,930	5,330	4,490	2,700	8,270	5,290	3,190
11.....	1,900	1,800	1,930	4,760	3,830	2,870	7,470	4,870	2,440
12.....	2,030	1,590	1,760	3,990	3,470	2,720	7,470	4,500	2,710
13.....	1,680	1,400	2,220	4,100	3,740	2,500	7,780	4,210	2,940
14.....	1,580	1,310	2,000	4,780	3,260	2,430	8,260	3,440	3,020
15.....	1,690	1,410	1,800	4,470	2,980	2,430	8,760	3,100	3,260
16.....	1,640	1,400	1,930	4,090	2,740	2,430	9,420	4,200	2,630
17.....	1,680	2,290	2,140	3,900	2,580	2,430	9,960	10,320	3,260
18.....	1,730	2,210	2,210	3,200	2,820	2,430	9,950	15,570	3,620
19.....	1,740	2,430	2,470	2,740	2,120	2,430	11,800	22,590	4,200
20.....	2,790	2,720	2,500	2,840	1,530	2,430	11,800	20,380	4,380
21.....	3,180	3,110	2,350	2,860	1,980	2,430	10,960	15,920	4,620
22.....	2,700	3,510	2,580	4,080	2,120	2,090	10,510	12,820	4,380
23.....	2,560	3,250	3,070	8,150	2,260	2,020	11,410	10,700	3,510
24.....	1,920	2,640	2,560	7,660	2,480	1,900	12,410	8,760	3,100
25.....	2,290	2,560	3,480	8,190	2,860	1,900	12,820	8,260	2,630
26.....	2,030	2,360	4,250	9,210	3,330	1,650	12,200	6,620	2,350
27.....	1,800	2,430	5,010	10,310	4,210	2,430	11,800	5,620	2,420
28.....	2,350	3,680	5,560	13,940	4,760	4,370	11,610	3,890	2,500
29.....	1,850	3,820	5,240	12,430	4,650	7,580	11,210	3,820	2,610
30.....	2,220	250	4,690	13,490	.....	9,950	10,310	3,510	2,490
31.....	1,680	.....	4,680	12,440	.....	11,800	.....	3,510	.....
Mean....	2,201	2,264	2,890	6,441	4,947	3,451	11,296	8,128	3,327

Monthly discharge of BLACK RIVER NEAR FELTS MILLS, for the nine months ending June 30, 1916

[Drainage area, 1,851 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF
	Maximum	Minimum	Mean	Per square mile	Depth in inches on drainage area
October.....	4,760	1,320	2,201	1.19	1.37
November.....	4,250	1,250	2,264	1.22	1.36
December.....	5,560	1,760	2,890	1.56	1.80
January.....	13,940	2,740	6,441	3.48	4.01
February.....	13,500	1,530	4,947	2.67	2.85
March.....	11,800	1,650	3,451	1.86	2.14
April.....	19,600	7,470	11,296	6.10	6.81
May.....	22,590	3,100	8,128	4.39	5.06
June.....	4,740	2,350	3,327	1.80	2.01



## MOOSE RIVER

### DESCRIPTION

Moose river is tributary to Black river at Lyons Falls, joining Black river just above the head of the fall of about 50 feet. The drainage of Moose river lies chiefly in Hamilton and Herkimer counties and comprises a wild, rugged and little inhabited region, largely forest-covered, but containing also large tracts of cut and burned-over lands, and numerous and extensive swamps and lakes. The stream above the gaging station near McKeever comprises three main branches. The south branch is chiefly broad and sluggish. The area tributary to this branch contains extensive swamps and marshes and but few lakes, the most important lakes being the Limekill and Little Moose lakes. The middle branch is substantially a continuous chain of lakes, known as the Fulton Chain, extending from Old Forge a distance of about 15 miles upstream through eight different lakes. The outflow from Fulton Chain is artificially controlled by a State dam at Old Forge. The first to fourth lakes, inclusive, are at elevation 1,706 feet above tide. There is also a dam at the outlet of the sixth lake. Sixth, Seventh and Eighth lakes are at elevations 1,785 to 1,788 feet above tide. The north branch of the stream is made up of a large number of scattered lakes, the most important one being Big Moose lake. The lower course of the north branch is sluggish and tortuous. The drainage basin above McKeever is nearly all shown on the Big Moose, Raquette lakes, Old Forge and West Canada lakes sheets of the United States Geological Survey topographic maps.

### MOOSE RIVER AT MOOSE RIVER

**Location.**— In the village of Moose River, Lewis county, about 3 miles downstream from McKeever station on the Adirondack division of the New York Central & Hudson River Railroad, 5 miles below the mouth of South branch of Moose river, and nearly 20 miles above the junction of Black and Moose rivers at Lyons Falls.

**Records available.**— June 5, 1900, to June 30, 1916.

**Drainage area.**— 370 square miles. (Measured on U. S. Geological Survey topographic maps.)

**Gage.**— Staff, in two sections, fastened to the left bank a short distance above cable; read twice daily. The gage datum was lowered 0.17 foot on February 28, 1903, and again 5.00 feet on January 1, 1913.

**Control.**— Composed of cobble and boulders; fairly permanent; current smooth; depth comparatively uniform. Just above the station is a small island on which ice and log jams occasionally form. Velocity from dam at McKeever to the station, relatively slow; below the station, velocity very high.

**Discharge measurements.**— Made from a cable a short distance below gage.

**Regulation.**— A timber dam at McKeever is used for power and for the regulation of flow for log-driving. During portions of the year, therefore, two gage readings a day may not give a representative mean. Seasonal distribution of flow affected by operation of State dam at Old Forge.

**Winter flow.**— Discharge relation affected by ice.

**Extremes of discharge.**— Current period: Maximum stage recorded, 14.0 feet at 8 A. M., May 18; discharge, 9,250 second-feet. Minimum stage recorded, 5.18 feet at 5 P. M., October 24; discharge, 79 second-feet.

1900–1916: Maximum stage recorded, 16.3 feet during the afternoon of March 27, 1913, determined by leveling from flood-marks; discharge, approximately 15,500 second-feet. Minimum stage recorded, 4.94 feet, July 21, 23, 25, 26, 27, 1913; discharge, 42 second-feet.

**Accuracy.**— Discharge rating curve for open channel fairly accurate. Published data for periods of open water considered good.

**Coöperation.**— Established and maintained by the United States Geological Survey in coöperation with the State Engineer and Surveyor.

**Discharge measurements of MOOSE RIVER AT MOOSE RIVER, during the nine months  
ending June 30, 1916**

DATE	Made by	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>
Dec. 28 a	A. H. Davison	d 8.31	1,230
Jan. 10 b	A. H. Davison	d 7.66	875
Jan. 11 b	A. H. Davison	d 7.42	789
Jan. 22 b	A. H. Davison	d 7.27	558
Feb. 1 b	A. H. Davison	d 9.81	2,630
Feb. 15 c	A. H. Davison	d 7.42	690
Feb. 16 b	A. H. Davison	d 7.34	546
Feb. 22 b	A. H. Davison	d 7.19	435
Mar. 1 b	C. C. Covert	d 7.25	472
Mar. 17 b	A. H. Davison	d 7.51	389
Mar. 28 b	A. H. Davison	d 7.89	680
May 6	A. H. Davison	8.84	1,760
May 26	A. H. Davison	8.44	1,460

a Measurement made under complete ice cover about 100 ft. below gage.

b Measurement made under complete ice cover at regular section.

c Measurement made under complete ice cover about 450 ft. below gage.

d Discharge relation affected by ice.

**Daily gage height, in feet, of MOOSE RIVER AT MOOSE RIVER, for the nine months  
ending June 30, 1916. Chris Hannan, Observer**

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1	6.45	6.8	7.4	7.0	10.0	7.3	9.8	9.6	7.1
2	6.4	6.8	7.2	6.6	10.0	7.6	10.3	9.6	7.0
3	6.1	6.5	7.2	7.2	9.7	7.4	10.2	9.6	7.0
4	6.45	6.45	7.0	7.2	9.0	7.5	9.8	9.4	7.0
5	6.6	6.4	6.7	7.2	8.6	7.0	9.2	9.3	7.1
6	8.4	6.45	7.2	7.3	8.1	7.0	9.0	8.8	6.8
7	8.1	5.55	7.4	8.0	8.1	7.4	8.8	8.5	6.6
8	7.2	6.2	7.2	8.0	7.8	7.3	8.6	8.6	6.5
9	7.0	6.15	7.0	7.2	8.1	7.4	7.8	8.6	6.5
10	6.2	6.1	7.0	7.7	7.8	7.4	8.2	8.4	6.3
11	7.2	6.1	7.0	7.4	7.6	7.4	8.1	8.2	6.1
12	6.7	6.1	5.8	7.2	7.6	7.2	8.2	8.0	6.6
13	6.4	6.45	6.8	7.3	7.0	7.6	8.5	7.6	6.6
14	6.6	5.7	6.7	7.2	7.4	7.6	8.8	7.4	6.6
15	6.4	7.0	6.7	7.4	7.4	7.5	9.1	7.1	6.8
16	6.4	6.6	6.7	6.6	7.3	7.6	8.8	8.0	6.6
17	5.7	7.0	6.6	7.2	7.4	7.6	10.4	11.6	6.9
18	6.45	6.9	6.6	7.0	7.2	7.6	10.0	13.0	7.5
19	6.6	6.5	6.0	7.0	7.3	7.4	9.6	10.5	7.5
20	6.8	7.0	7.4	7.0	6.8	7.6	9.4	10.2	8.0
21	6.9	7.4	6.8	7.1	7.2	7.6	9.4	9.6	7.8
22	6.9	7.2	7.2	7.2	7.2	7.6	10.4	9.5	7.2
23	6.8	7.1	6.7	8.6	7.2	7.4	10.2	9.2	7.0
24	5.8	6.9	6.7	9.2	7.1	7.4	10.0	9.0	6.8
25	6.25	6.8	5.8	8.8	7.2	7.6	10.0	8.6	6.1
26	6.6	6.6	7.8	8.6	7.4	7.6	10.2	8.4	6.4
27	6.4	6.6	8.4	8.6	7.3	7.7	10.4	8.1	6.4
28	6.6	7.3	8.2	10.0	8.0	8.0	10.0	7.2	6.4
29	6.6	7.8	7.6	10.4	7.8	8.3	10.0	7.5	6.2
30	6.5	7.7	7.2	9.6	.....	8.8	9.6	7.0	6.2
31	6.15	.....	7.2	9.3	.....	9.0	.....	7.6	.....

NOTE.—Discharge relation affected by ice, December 15 to January 22 and February 9 to March 30, both inclusive.

Daily discharge, in second-feet, of MOOSE RIVER AT MOOSE RIVER, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	426	545	805	545	2,860	510	2,660	2,480	665
2.....	409	545	710	393	2,860	585	3,170	2,480	625
3.....	316	442	710	625	2,570	545	3,060	2,480	625
4.....	426	426	625	625	1,940	545	2,660	2,300	625
5.....	476	409	510	625	1,590	377	2,120	2,210	665
6.....	1,430	426	710	665	1,220	331	1,940	1,760	545
7.....	1,220	164	805	1,020	1,220	442	1,760	1,510	476
8.....	710	346	710	1,020	1,020	409	1,590	1,590	442
9.....	625	331	625	625	965	426	1,020	1,590	442
10.....	346	316	625	875	855	426	1,290	1,430	377
11.....	710	316	625	739	755	442	1,220	1,290	316
12.....	510	316	229	625	710	362	1,290	1,150	476
13.....	409	426	545	710	442	476	1,510	910	476
14.....	476	202	510	625	585	476	1,760	805	476
15.....	409	625	476	710	585	426	2,030	665	545
16.....	409	476	442	409	545	426	1,760	1,150	476
17.....	202	625	409	585	545	409	3,280	4,750	585
18.....	426	585	377	476	510	393	2,860	7,060	855
19.....	476	442	229	476	510	331	2,480	3,390	855
20.....	545	625	710	442	316	393	2,300	3,060	1,150
21.....	585	805	476	476	426	393	2,300	2,480	1,020
22.....	585	710	625	510	442	393	3,280	2,390	710
23.....	545	665	442	1,590	476	362	3,060	2,120	625
24.....	229	585	442	2,120	409	362	2,860	1,940	545
25.....	362	545	176	1,760	426	409	2,860	1,590	316
26.....	476	476	910	1,590	510	442	3,060	1,430	409
27.....	409	476	1,290	1,590	476	545	3,280	1,220	409
28.....	476	755	1,150	2,860	805	665	2,860	710	409
29.....	476	1,020	805	3,280	710	965	2,860	855	346
30.....	442	965	625	2,480	.....	1,430	2,480	625	346
31.....	331	.....	625	2,210	.....	1,940	.....	910	.....
Mean....	512	520	611	1,070	941	536	2,360	1,950	561

NOTE.—Discharge relation affected by ice, December 15 to January 22 and February 9 to March 30, both inclusive. Daily discharge given in these periods is approximate.

Monthly discharge of MOOSE RIVER AT MOOSE RIVER, for the nine months ending June 30, 1916

[Drainage area, 370 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF		Accu- racy
	Maximum	Minimum	Mean	Per square mile	Depth in inches on drainage area		
October.....	1,430	202	512	1.38	1.59	B	
November.....	1,020	164	520	1.41	1.57	B	
December.....	1,290	176	611	1.65	1.90	B	
January.....	3,280	393	1,070	2.89	3.33	B	
February.....	2,860	316	941	2.54	2.74	C	
March.....	1,940	331	536	1.45	1.67	C	
April.....	3,280	1,020	2,360	6.38	7.12	B	
May.....	7,060	625	1,950	5.27	6.08	B	
June.....	1,150	316	561	1.52	1.70	B	

**MIDDLE BRANCH OF MOOSE RIVER AT OLD FORGE**

**Location.**— About 300 feet below the highway bridge in Old Forge, Herkimer county, and about 400 feet below the dam.

**Records available.**— November 9, 1911, to June 30, 1916.

**Drainage area.**— 51.5 square miles. (Measured on U. S. Geological Survey topographic maps.)

**Gage.**— Vertical staff on left bank of stream 300 feet below highway bridge.

**Control.**— Rock ledge about 200 feet below the gage. Channel fairly straight and uniform from dam to this point.

**Discharge measurements.**— Made by wading at low and medium stages and from the highway bridge at high stages.

**Regulation.**— Flow controlled at the dam.

**Winter flow.**— Ice does not form to an extent sufficient to affect gage heights at this station.

**Extremes of discharge.**— Current period: Maximum stage recorded, 4.8 feet at 8 A. M. and 5 P. M., May 19; discharge, 860 second-feet. Minimum stage occurs whenever the gates at the dam are closed, discharge being due to leakage and discharge through the fish hatchery.

1911–1916: Maximum stage recorded, 4.8 feet at 8 A. M. and 5 P. M., May 19; discharge, 860 second-feet.

**Accuracy.**— Discharge rating curve well defined; estimates good.

**Coöperation.**— Established and maintained by the United States Geological Survey in coöperation with the State Conservation Commission.

Discharge measurements of MIDDLE BRANCH OF MOOSE RIVER AT OLD FORGE, during the nine months ending June 30, 1916

DATE	Made by	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>
May 26 a. ....	A. H. Davison .....	3.10	339
May 26 a. ....	A. H. Davison .....	3.10	330
June 9 b. ....	O. W. Hartwell .....	1.13	36.2
June 10 b. ....	O. W. Hartwell .....	1.57	74.0
June 10 b. ....	O. W. Hartwell .....	1.80	104
June 10 b. ....	O. W. Hartwell .....	1.35	55.6

a Measurement made by wading 50 ft. above gage.

b Measurement made by wading 25 ft. above gage.

Daily gage height, in feet, of MIDDLE BRANCH OF MOOSE RIVER AT OLD FORGE, for the nine months ending June 30, 1916. Jacob Edick, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1. ....	2.25	2.2	1.6	.52	2.85	1.45	2.8	2.4	1.65
2. ....	2.25	2.2	1.6	.52	2.85	1.45	2.85	2.4	1.65
3. ....	2.25	2.2	1.6	.52	2.8	1.45	3.1	2.4	1.35
4. ....	2.25	2.2	1.6	.52	2.75	1.44	3.1	2.45	1.20
5. ....	2.2	1.95	1.6	.52	2.65	1.44	3.1	2.45	1.20
6. ....	2.25	1.7	1.6	.54	2.6	1.44	3.1	2.5	1.20
7. ....	2.25	1.7	1.6	.55	2.55	1.45	3.1	2.5	1.22
8. ....	2.25	1.65	1.6	.58	2.5	1.45	3.0	2.5	1.15
9. ....	2.25	1.65	1.6	.63	2.5	1.45	3.0	2.8	1.14
10. ....	2.25	1.65	1.6	.68	2.45	1.47	3.0	2.75	1.12
11. ....	2.25	1.9	1.6	.72	2.45	1.5	3.0	2.75	1.10
12. ....	2.2	2.1	1.6	.78	2.15	1.5	2.95	.....	1.10
13. ....	2.2	2.1	1.6	.85	2.00	1.49	2.95	.....	1.10
14. ....	2.2	2.1	1.14	.89	1.95	1.49	2.9	1.10	1.10
15. ....	2.25	2.3	.50	.95	1.95	1.5	2.9	1.05	1.10
16. ....	2.2	2.5	.50	.95	1.85	1.65	2.95	1.48	2.0
17. ....	2.2	2.5	.50	1.00	1.85	1.9	2.9	3.4	2.55
18. ....	2.2	2.5	.50	1.04	1.85	1.9	2.9	4.4	2.05
19. ....	2.2	1.6	.50	1.04	1.85	1.9	2.5	4.8	1.8
20. ....	2.25	1.6	.50	1.07	1.85	1.85	1.85	4.7	1.8
21. ....	2.2	1.6	.51	1.16	1.85	1.85	1.85	4.3	1.8
22. ....	2.2	1.6	.50	1.25	1.7	1.85	1.9	4.0	1.65
23. ....	2.2	1.6	.50	1.38	1.40	1.85	2.0	3.8	1.35
24. ....	2.2	1.6	.50	1.45	1.42	1.85	2.0	3.5	1.35
25. ....	2.2	1.6	.50	1.55	1.44	1.85	2.0	3.3	1.14
26. ....	2.2	1.6	.50	1.8	1.45	1.85	2.05	3.0	1.05
27. ....	2.2	1.6	.51	2.05	1.45	1.85	2.25	2.65	1.05
28. ....	2.2	1.6	.52	2.35	1.45	1.85	2.35	2.1	1.05
29. ....	2.2	1.6	.52	2.65	1.43	1.85	2.4	1.65	1.05
30. ....	2.2	1.6	.52	2.65	.....	2.05	2.4	1.65	1.05
31. ....	2.2	.....	.52	2.7	.....	2.3	.....	1.65	.....

NOTE.— Discharge relation probably not affected by ice, affected by backwater from the Moose river, May 17 to 25, inclusive.

**Daily discharge, in second-feet, of MIDDLE BRANCH OF MOOSE RIVER AT OLD FORGE,  
for the nine months ending June 30, 1916**

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1	158	150	75	5.6	260	60	25	181	86
2	158	150	75	5.6	260	60	260	181	86
3	158	150	75	5.6	250	60	310	181	56
4	158	150	75	5.6	241	60	310	189	43
5	150	116	75	5.6	223	60	310	189	43
6	158	86	75	6.2	214	60	310	197	43
7	158	83	75	6.5	206	60	310	197	43
8	158	80	75	7.4	197	60	290	197	40
9	158	80	75	9.2	197	60	290	250	39
10	158	80	75	11	189	62	290	241	37
11	158	110	75	13	189	65	290	211	36
12	150	136	75	15	143	65	280	233	36
13	150	136	75	18	123	61	280	33	36
14	150	136	36	20	116	64	270	33	36
15	158	165	5.0	24	116	65	270	30	36
16	150	197	5.0	24	104	80	280	63	128
17	180	197	5.0	27	104	110	270	405	216
18	150	197	5.0	29	104	110	270	710	135
19	150	75	5.0	9	104	110	197	860	103
20	158	75	5.0	31	104	104	104	820	103
21	150	75	5.3	37	104	104	104	675	103
22	150	75	5.0	44	86	104	110	578	86
23	150	75	5.0	54	58	104	123	518	56
24	150	75	5.0	60	58	104	123	432	56
25	150	75	5.0	70	60	104	123	379	39
26	150	75	5.0	98	60	104	130	307	32
27	150	75	5.3	130	60	104	158	234	32
28	150	75	5.6	173	60	104	173	142	32
29	150	75	5.6	223	59	104	181	86	32
30	150	75	5.6	223	.....	130	181	86	32
31	150	.....	5.6	232	.....	165	.....	86	.....
Mean	153	110	35.4	53.0	140	86.1	228	282	62.8

NOTE.— Discharge relation affected by backwater from the Moose river from May 17 to 25, inclusive. Daily discharge for this period computed from gate openings and lake elevations at Old Forge dam.

**Monthly discharge of MIDDLE BRANCH OF MOOSE RIVER AT OLD FORGE, for the  
nine months ending June 30, 1916**

[Drainage area, 51.5 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF Depth in inches on drainage area	Accu- racy
	Maximum	Minimum	Mean	Per square mile		
October	158	150	153	2.97	3.42	A
November	197	75	110	2.14	2.39	A
December	75	5.0	35.4	0.687	0.79	B
January	232	5.6	53	1.03	1.19	B
February	260	56	140	2.72	2.93	A
March	165	60	86.1	1.67	1.92	A
April	310	104	228	4.43	4.94	A
May	860	30	282	5.48	6.32	B
June	216	32	62.8	1.22	1.36	A

## BEAVER RIVER

East pond, at elevation about 1,956 feet, situated in the lake region of northern Hamilton county, may be said to be the headwaters of Beaver river. This pond is connected by a series of lakes, brooks and swamps with Beaver river flow, which is drained by Beaver river proper, all flowing in a general westerly direction. Razorback pond in Herkimer county is probably the highest body of water draining into Beaver river, being at elevation about 2,200.

From East pond to the junction of Beaver and Black rivers, about eight miles above Carthage, there is a total fall of about 1,200 feet in a distance of about 60 miles.

The principal tributary, Twitchell creek, having its source in Twitchell lake, near Big Moose lake, flows in a general north-westerly direction emptying into Beaver river flow about  $3\frac{1}{2}$  miles above the State dam.

### BEAVER RIVER AT STATE DAM NEAR BEAVER RIVER

**Location.**— At the concrete storage dam, at the outlet of Beaver river flow, about  $7\frac{1}{2}$  miles west of Beaver River P. O., Herkimer county, and 7 miles above Beaver lake at Number Four.

**Records available.**— May 11, 1908, to June 30, 1916.

**Drainage area.**—176 square miles. (Measured on United States Geological Survey topographic maps.)

**Gages.**— Elevation of water-surface in the reservoir is determined by a staff gage in two sections, on the westerly corner of the gate-house; read once a day. The mean elevation of the crest of the spillway is at gage height 16.96 feet.

Prior to September 28, 1913, this elevation was determined by measuring the distance from the water-surface to a reference point which had been set at the elevation of the crest of the spillway.

Widths of sluice-gate openings determined by measuring on the gate stems the distance they have been raised.

**Discharge measurements.**— Current-meter measurements made from a temporary foot-bridge at the mouth of the outlet tunnel, below the gates. Discharge over the spillway has not been measured.



**Discharge ratings.**—Records include discharge through one or more of four 4-foot circular sluice-gates, when opened, the discharge over the spillway and the discharge through the logway at the westerly end of the spillway.

The sluice-gates have been rated by current-meter measurements made at different lake elevations but no measurements have been made of the discharge over the spillway or through the logway. Theoretic coefficients based on the Cornell Experiments\* have been used to compute ratings for the spillway and logway.

**Regulation.**—At ordinary stages the discharge of Beaver river is completely regulated by the operation of the sluice-gates.

**Extremes of stage.**—Current period: Maximum elevation of water-surface in reservoir, 19.0 feet on May 19. Minimum stage recorded, 16.5 feet on November 14.

1908–1916: Maximum elevation of water-surface in reservoir, 19.46 feet on March 29, 1913. Minimum stage, 2.9 feet on September 29, and October 1, 1913.

**Extremes of discharge.**—Current period: Maximum discharge, 2,210 second-feet on May 19. Minimum discharge, zero during periods when gates were closed and there was no flow over the spillway.

1908–1916: Maximum discharge, 3,300 second-feet on May 2, 1911.

**Accuracy.**—The accuracy of these estimates depends to a large extent on the care with which the gates were set to the recorded openings. For periods when the water was flowing over the spillway it also depends on the care with which the elevation of the water-surface in the reservoir was determined. Probably the estimates as a whole are fairly good.

**Coöperation.**—Gaging station maintained by the United States Geological Survey in coöperation with the State Conservation Commission.

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\* United States Geological Survey Water-supply Paper 200.

**Gate opening and gage height at STATE DAM IN BEAVER RIVER NEAR BEAVER RIVER, for the year ending September 30, 1908**

[illegible]

Gate opening and gage height at STATE DAM IN BEAVER RIVER NEAR BRAVER RIVER, for the year ending September 30, 1909

DAY	OCTOBER				NOVEMBER				DECEMBER				JANUARY				FEBRUARY				MARCH			
	GATE OPENING IN INCHES				GATE OPENING IN INCHES				GATE OPENING IN INCHES				GATE OPENING IN INCHES				GATE OPENING IN INCHES				GATE OPENING IN INCHES			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
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NOTE.— From October 26 to November 30, reservoir gage heights may have been in error due to observation of the elevation of water-surface above the old wooden dam.

Gate opening and gage height at STATS DAM IN BRAVER RIVER NEAR BEAVER RIVER, for the year ending September 30, 1909—Continued

DAY	APRIL				MAY				JUNE				JULY				AUGUST				SEPTEMBER			
	GATE OPENING		Reser-		GATE OPENING		Reser-		GATE OPENING		Reser-		GATE OPENING		Reser-		GATE OPENING		Reser-		GATE OPENING		Reser-	
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
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d Logway open.



Gate opening and gage height at STATE DAM IN BEAVER RIVER NEAR BEAVER RIVER, for the year ending September 30, 1910—Continued

[illegible]

Gate opening and gage height at STATE DAM IN BEAVER RIVER NEAR BEAVER RIVER, for the year ending September 30, 1911

[illegible]





Gate opening and gage height at STATE DAM IN BEAVER RIVER NEAR BEAVER RIVER, for the year ending September 30, 1912

Day	OCTOBER				NOVEMBER				DECEMBER				JANUARY				FEBRUARY				MARCH			
	GATE OPENING IN INCHES				GATE OPENING IN INCHES				GATE OPENING IN INCHES				GATE OPENING IN INCHES				GATE OPENING IN INCHES				GATE OPENING IN INCHES			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
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\* Estimated.

Gate opening and gage height at STATE DAM IN BEAVER RIVER NEAR BEAVER RIVER, for the year ending September 30, 1912 — Continued

DAY	APRIL				MAY				JUNE				JULY				AUGUST				SEPTEMBER			
	GATE OPENING IN INCHES				GATE OPENING IN INCHES				GATE OPENING IN INCHES				GATE OPENING IN INCHES				GATE OPENING IN INCHES				GATE OPENING IN INCHES			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
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• Estimated.



Gate opening and gage height at STATE DAM IN BEAVER RIVER NEAR BEAVER RIVER, for the year ending September 30, 1913—Continued

DAY	APRIL				MAY				JUNE				JULY				AUGUST				SEPTEMBER			
	GATE OPENING IN INCHES				GATE OPENING IN INCHES				GATE OPENING IN INCHES				GATE OPENING IN INCHES				GATE OPENING IN INCHES				GATE OPENING IN INCHES			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1.	.048	.048			18.71	24			17.13	24			16.46				48				48			
2.	.048	.048			18.54	24			17.13	24			16.38				48				48			
3.	.048	.048			18.38	24			17.21	24			16.29				48				48			
4.	.048	.048			18.54	24			17.21	24			16.29				48				48			
5.	.048	.048			18.63	24			17.29	24			16.21				48				48			
6.	.048	.048			18.63	24			17.29	24			16.21				48				48			
7.					18.54	24			17.21	24			16.13				48				48			
8.					18.38	24			17.21	24			16.04				48				48			
9.					18.29	24			17.13	24			15.96				48				48			
10.					18.13	24			17.13	24			15.88				48				48			
11.					18.13	24					24		15.79				48				48			
12.					18.13	24			17.13	24			15.79				48				48			
13.					18.13	24			17.04	24			15.71				48				48			
14.					18.13	24			16.96	24			15.71				48				48			
15.					18.13	24			16.88	24			15.63				48				48			
16.					18.04	24			16.79	24			15.54				48				48			
17.					18.04	24			16.71	24			15.46				48				48			
18.					18.04	24			16.63	24			15.38				48				48			
19.					18.04	24			16.54	24			15.29				48				48			
20.					17.63	24			16.38	24			15.21				48				48			
21.					17.46	24			16.21	24			15.13				48				48			
22.					17.29	24			16.38	24			15.04				48				48			
23.					17.13	24			16.54	24			14.88				48				48			
24.					17.04	24			16.71	24			14.71				48				48			
25.					17.13	24			16.88	24			14.63				48				48			
26.					17.21	24			16.79	24			14.54				48				48			
27.					17.04	24			16.63	24			14.48				48				48			
28.					17.46	24			16.63	24			14.13				48				48			
29.					17.29	24			16.63	24			14.04				48				48			
30.					17.13	24			16.54	24			13.96				48				48			
31.					17.71	24			16.54	24			13.88				48				48			
					17.71	24			13.79	48			48				48				48			

a Gate open twelve hours per day.

# REPORT OF STATE ENGINEER

Gate opening and gage height at STATE DAM IN BEAVER RIVER NEAR BEAVER RIVER, for the year ending September 30, 1914

Day	OCTOBER				NOVEMBER				DECEMBER				JANUARY				FEBRUARY				MARCH				
	GATE OPENING IN INCHES				Reser- voir gauge height in feet	GATE OPENING IN INCHES				Reser- voir gauge height in feet	GATE OPENING IN INCHES				Reser- voir gauge height in feet	GATE OPENING IN INCHES				Reser- voir gauge height in feet	GATE OPENING IN INCHES				Reser- voir gauge height in feet
	1	2	3	4		1	2	3	4		1	2	3	4		1	2	3	4		1	2	3	4	
1	48	2.9	12	13.7	17.5	17.5	17.5	17.5	17.35	48	14.2	48	48	24	48	8.7									
2	48	3.0	12	14.0	17.5	17.5	17.5	17.5	17.35	48	14.2	48	48	24	48	8.5									
3	48	3.8	12	14.3	17.5	17.5	17.5	17.5	24	48	14.1	48	48	24	48	8.2									
4	48	4.7	24	14.6	17.6	17.6	17.6	17.6	24	48	14.1	48	48	24	48	8.0									
5	48	5.7	24	14.4	17.9	17.9	17.9	17.9	24	48	14.0	48	48	24	48	7.8									
6	48	6.5	24	14.6	17.7	17.7	17.7	17.7	24	48	14.0	48	48	24	48	7.7									
7	48	6.5	24	14.7	17.7	17.7	17.7	17.7	24	48	13.9	48	48	24	48	7.2									
8	48	6.5	24	14.7	17.7	17.7	17.7	17.7	24	48	13.9	48	48	24	48	6.8									
9	48	6.5	12	15.0	17.7	17.7	17.7	17.7	24	48	13.9	48	48	24	48	6.0									
10	48	6.4	12	16.0	17.7	17.7	17.7	17.7	48	17.0	48	13.7	48	24	48	5.7									
11	48	6.4	12	16.7	17.7	17.7	17.7	17.7	48	16.9	48	13.65	48	24	48	5.0									
12	48	6.6	12	16.8	17.7	17.7	17.7	17.7	48	16.8	48	13.5	48	24	48	4.5									
13	48	6.5	12	17.2	17.6	17.6	17.6	17.6	48	16.7	48	13.3	48	24	48	4.0									
14	48	6.5	12	17.3	17.6	17.6	17.6	17.6	48	16.6	48	13.2	48	24	48	3.6									
15	48	6.3	15	17.5	17.6	17.6	17.6	17.6	48	16.5	24	48	13.0	24	48	3.2									
16	48	5.9	10	17.6	17.6	17.6	17.6	17.6	48	16.4	24	48	12.7	48	48	3.3									
17	48	5.6	10	17.6	17.6	17.6	17.6	17.6	48	16.25	24	48	12.4	48	48	4.8									
18	48	5.2	10	17.6	17.5	17.5	17.5	17.5	48	16.1	24	48	12.1	48	48	5.3									
19	48	5.0	10	17.6	17.5	17.5	17.5	17.5	48	16.0	24	48	11.8	48	48	5.6									
20	48	5.0	24	18.1	17.5	17.5	17.5	17.5	48	15.95	24	48	11.6	48	48	5.5									
21	48	7.4	24	18.2	17.5	17.5	17.5	17.5	48	15.8	24	48	11.4	48	48	5.5									
22	48	9.3	48	18.0	17.4	17.4	17.4	17.4	48	15.6	24	48	11.0	48	48	5.6									
23	48	9.7	48	17.8	17.4	17.4	17.4	17.4	48	15.4	24	48	10.6	48	48	5.6									
24	48	10.3	18	17.5	17.4	17.4	17.4	17.4	48	15.3	24	48	10.2	48	48	5.4									
25	48	10.5	18	17.7	17.4	17.4	17.4	17.4	48	14.95	24	48	9.8	48	48	5.4									
26	48	11.3	18	17.7	17.4	17.4	17.4	17.4	48	14.85	24	48	9.6	48	48	5.5									
27	48	12.0	18	17.7	17.4	17.4	17.4	17.4	48	14.4	24	48	9.3	48	48	6.4									
28	48	12.7	18	17.7	17.4	17.4	17.4	17.4	48	14.2	24	48	9.0	48	48	8.0									
29	48	12.9	18	17.6	17.4	17.4	17.4	17.4	48	14.2	48	14.1	9.3	48	48	11.0									
30	48	13.3	12	17.5	17.4	17.4	17.4	17.4	48	14.1	48	14.0	12.2	48	48	12.2									
31	48	13.5	31		17.4				48																

Gate opening and gage height at STATE DAM IN BEAVER RIVER NEAR BEAVER RIVER, for the year ending September 30, 1914—Continued

Day	APRIL				MAY				JUNE				JULY				AUGUST				SEPTEMBER			
	GATE OPENING IN INCHES		Reest- voir gage height in feet		GATE OPENING IN INCHES		Reest- voir gage height in feet		GATE OPENING IN INCHES		Reest- voir gage height in feet		GATE OPENING IN INCHES		Reest- voir gage height in feet		GATE OPENING IN INCHES		Reest- voir gage height in feet		GATE OPENING IN INCHES		Reest- voir gage height in feet	
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1.					13.3	20	18.5																	
2.					14.6	20	18.4																	
3.					15.4	20	18.2																	
4.					16.1	20	18.1																	
5.					16.7	20	18.0																	
6.					17.2	20	17.9																	
7.					17.5		17.8																	
8.					17.8		17.8																	
9.	48				17.7		17.4																	
10.	48				17.9		17.8		12															
11.					18.0		17.7		12															
12.					17.8		17.7		12															
13.					17.7		17.7		12															
14.					17.5		17.7		12															
15.					17.4		17.7		12															
16.					17.6		17.7		12															
17.					17.9		17.6		18															
18.					17.9		17.6		18															
19.					18.0		17.6		18															
20.					19.3		17.5		18															
21.					19.1		17.5		18															
22.					18.9		17.5		18															
23.					18.8		17.5		18															
24.					18.6		17.4		18															
25.					18.5		17.4		18															
26.					18.5		17.4		24															
27.					18.5		17.4		24															
28.					18.6		17.4		24															
29.					18.6		17.3		24															
30.					18.7		17.3		24															
31.							17.3																	

6 Gate open thirteen hours per day.



Gate opening and gage height at STATE DAM IN BEAVER RIVER NEAR BEAVER RIVER, for the year ending September 30, 1915

DAY	OCTOBER				NOVEMBER				DECEMBER				JANUARY				FEBRUARY				MARCH				
	GATE OPENING IN INCHES				Reser- voir gate height in feet	GATE OPENING IN INCHES				Reser- voir gate height in feet	GATE OPENING IN INCHES				Reser- voir gate height in feet	GATE OPENING IN INCHES				Reser- voir gate height in feet	GATE OPENING IN INCHES				Reser- voir gate height in feet
	1	2	3	4		1	2	3	4		1	2	3	4		1	2	3	4		1	2	3	4	
1				48	11.9			24	10.4					16.0				17.4							17.9
2				48	11.8			24	10.4					16.5				17.4							17.9
3				48	11.5			24	10.4					17.4				17.4							17.9
4				48	11.5			24	10.4					17.7				17.4							17.8
5				48	11.4			24	10.5					17.8				17.4							17.7
6				48	11.2			24	10.5					17.8				17.5							17.7
7				48	11.1			24	10.6					17.7				17.5							17.6
8				48	10.8			24	10.6					17.6				17.8							17.6
9				48	10.7			24	10.6					17.6				17.8							17.6
10				48	10.6			24	10.6					17.6				17.7							17.5
11				48	10.3			24	10.6					17.5				17.7							17.5
12				48	10.2			24	10.6					17.5				17.6							17.5
13				48	10.1			24	10.6					17.5				17.6							17.4
14				48	10.0			24	10.7					17.5				17.6							17.4
15				48	9.8			24	10.9					17.5				17.6							17.4
16				48	9.6			24	11.0					17.5				17.6							17.4
17				48	9.6			24	11.8					17.6				17.7							17.4
18				48	9.5			24	12.4					17.5				17.7							17.3
19				48	9.7			24	12.8					17.5				17.7							17.3
20				24	10.0			24	13.0					17.5				17.9							17.3
21				24	10.3			24	13.1					17.5				17.9							17.3
22				24	10.5			24	13.2					17.5				17.5							17.3
23				24	10.5			24	13.4					17.5				17.8							17.3
24				24	10.5			24	13.6					17.4				17.8							17.3
25				24	10.5			24	13.9					17.3				17.7							17.3
26				24	10.5			24	14.1					17.3				17.7							17.3
27				24	10.3			24	14.4					17.3				17.6							17.3
28				24	10.3			24	14.8					17.3				17.5							17.3
29				24	10.3			24	15.2					17.4				17.5							17.3
30				24	10.5			24	15.5					17.4				17.5							17.3
31				24	10.5			24						17.4				17.5							17.3

Gate opening and gage height at STATE DAM IN BEAVER RIVER NEAR BEAVER RIVER, for the year ending September 30, 1915—Continued

DAY	APRIL				MAY				JUNE				JULY				AUGUST				SEPTEMBER			
	GATE OPENING IN INCHES				GATE OPENING IN INCHES				GATE OPENING IN INCHES				GATE OPENING IN INCHES				GATE OPENING IN INCHES				GATE OPENING IN INCHES			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1.																								
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29.																								
30.																								
31.																								

a Gates open 12 hours per day.



Gate opening and gage height at STATE DAM IN BEAVER RIVER NEAR BEAVER RIVER, for the year ending September 30, 1916

DAY	OCTOBER				NOVEMBER				DECEMBER				JANUARY				FEBRUARY				MARCH			
	GATE OPENING IN INCHES				GATE OPENING IN INCHES				GATE OPENING IN INCHES				GATE OPENING IN INCHES				GATE OPENING IN INCHES				GATE OPENING IN INCHES			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1	36	16.8			36	15.85			36	17.0			36	17.35			36	18.3			36			
2	36	16.7			36	15.8			36	17.1			36	17.35			36	18.3			36			
3	36	16.6			36	15.8			36	17.1			36	17.35			36	18.2			36			
4	36	16.5			36	15.8			36	17.1			36	17.3			36	18.0			36			
5	36	16.55			36	15.8			36	17.05			36	17.3			36	17.9			36			
6	36	16.6			36	15.8			36	17.05			36	17.4			36	17.8			36			
7	36	16.7			36	15.65			36	17.0			36	17.5			36	17.6			36			
8	36	16.7			36	15.65			36	17.0			36	17.5			36	17.6			36			
9	36	16.7			36	15.6			36	17.0			36	17.5			36	17.55			36			
10	36	16.7			36	15.6			36	16.95			36	17.4			36	17.55			36			
11	36	16.7			36	15.6			36	16.9			36	17.4			36	17.45			36			
12	36	16.6			36	15.57			36	16.9			36	17.3			36	17.45			36			
13	36	16.6			36	15.57			36	16.85			36	17.35			36	17.4			36			
14	36	16.5			36	15.5			36	16.85			36	17.35			36	17.35			36			
15	36	16.5			36	15.55			36	16.8			36	17.3			36	17.35			36			
16	36	16.4			36	15.6			36	16.75			36	17.3			36	17.25			36			
17	36	16.3			36	15.68			36	16.7			36	17.3			36	17.2			36			
18	36	16.3			36	15.68			36	16.7			36	17.25			36	17.15			36			
19	36	16.25			36	15.68			36	16.75			36	17.25			36	17.1			36			
20	36	16.3			36	15.78			36	16.75			36	17.2			36	17.1			36			
21	36	16.3			36	15.95			36	16.8			36	17.2			36	17.05			36			
22	36	16.3			36	16.1			36	16.85			36	17.3			36	17.05			36			
23	36	16.2			36	16.2			36	16.85			36	17.4			36	17.05			36			
24	36	16.1			36	16.25			36	16.8			36	17.6			36	17.0			36			
25	36	16.05			36	16.3			36	16.8			36	17.6			36	16.95			36			
26	36	16.0			36	16.3			36	17.0			36	17.6			36	17.1			36			
27	36	16.0			36	16.3			36	17.2			36	17.65			36	17.1			36			
28	36	15.95			36	16.6			36	17.35			36	17.85			36	17.2			36			
29	36	15.9			36	16.7			36	17.4			36	18.1			36	17.2			36			
30	36	15.8			36	16.9			36	17.4			36	18.2			36	16.95			36			
31	36	15.85			36				36	17.4			36	18.2			36	17.4			36			

Gate opening and gage height at STATE DAM IN BEAVER RIVER NEAR BEAVER RIVER, for the year ending September 30, 1916—Continued

Day	APRIL				MAY				JUNE				JULY				AUGUST				SEPTEMBER				Rees- voir gage height in feet
	GATE OPENING IN INCHES				Rees- voir gage height in feet	GATE OPENING IN INCHES				Rees- voir gage height in feet	GATE OPENING IN INCHES				Rees- voir gage height in feet	GATE OPENING IN INCHES				Rees- voir gage height in feet					
	1	2	3	4		1	2	3	4		1	2	3	4		1	2	3	4		1	2	3	4	
1					30	17.25					17.6					17.4					48	12.1			
2					30	17.5			30	18.0	17.6					17.4				48	12.0				
3					30	d18.0			30	18.05	17.6					17.45				48	11.9				
4					30	d17.9			30	18.1	17.7					17.55				48	11.7				
5					30	d17.8			30	18.1	17.7					17.5				48	11.6				
6					30	17.8			30	18.1	17.7					17.5				48	11.4				
7					30	17.65			24	18.0	17.65					17.45				48	11.25				
8					26	17.6			24	17.9	17.6					17.4				48	11.1				
9					30	d17.6			24	17.8	17.6					17.4				48	11.0				
10					30	d17.5			24	17.7	17.6					17.3				48	10.7				
11					36	d17.45			24	17.6	17.55					17.3				48	10.6				
12					36	d17.5			24	17.55	17.5					17.3				48	10.4				
13					c48	17.5			24	17.5	17.55					17.3				48	10.2				
14					c48	17.5			24	17.5	17.55					17.25				48	10.0				
15					c48	17.6			17.45	17.45	17.55					17.25				48	9.8				
16					48	17.7			17.55	17.6	17.6					17.3				48	9.6				
17					48	17.55			17.5	17.5	17.65					17.3				48	9.7				
18					48	18.0			18.8	18.8	17.6					17.3				48	9.5				
19					48	17.9			48	19.0	17.9					17.3				48	9.3				
20					48	17.9			48	18.5	17.5					17.3				48	9.1				
21					48	18.0			48	18.3	17.5					17.3				48	8.9				
22					48	18.1			48	18.15	17.5					17.3				48	8.7				
23					48	18.15			48	18.0	17.45					17.15				48	8.5				
24					48	18.2			48	18.2	17.45					17.15				48	8.4				
25					48	18.1			48	17.8	17.45					17.1				48	8.2				
26					48	18.1			48	17.8	17.45					17.1				48	8.0				
27					48	18.1			24	17.7	17.4					17.1				48	7.9				
28					48	18.05			24	17.65	17.4					17.1				48	7.7				
29					48	18.0			24	17.6	17.5					17.1				48	7.8				
30					30	18.0			24	17.6	17.5					17.1				48	7.9				
31										17.6	17.45					16.4				48	12.3				

c Gate open 11 hours per day.

d Logway open.

## Monthly discharge of BEAVER RIVER AT STATE DAM NEAR BEAVER RIVER

(Drainage area, 176 square miles)

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF	Accu- racy
	Maximum	Minimum	Mean	Per square mile	Depth in inches on drainage area	
1908						
May 11-31.....	1,010	315	599	3.41	2.66	D
June.....	330	193	270	1.53	1.71	C
July.....	250	134	177	1.01	1.16	C
August.....	169	0	102	0.580	0.67	C
September.....	245	0	109	0.619	0.69	C
The period.....	1,010	0	228	1.30	6.89	
1908-1909						
October.....	397	212	301	1.71	1.97	C
November.....	243	106	181	1.01	1.16	C
December.....	120	112	118	0.670	0.77	B
January.....	364	120	140	0.795	0.92	B
February.....	750	147	339	1.93	2.01	B
March.....	500	0	219	1.24	1.42	B
April.....	2,680	2	1,220	6.93	7.73	D
May.....	1,740	466	1,050	5.97	6.88	C
June.....	466	153	307	1.74	1.94	C
July.....	159	76	148	0.841	0.97	B
August.....	473	76	256	1.45	1.67	B
September.....	194	112	152	0.854	0.96	B
The year.....	2,680	0	369	2.10	28.40	
1909-1910						
October.....	126	107	113	0.642	0.74	C
November.....	190	117	144	0.818	0.91	B
December.....	200	129	180	1.02	1.18	B
January.....	184	0	132	0.750	0.86	B
February.....	426	71	259	1.47	1.53	B
March.....	1,580	359	560	3.18	3.67	B
April.....	2,020	530	862	4.90	5.47	C
May.....	730	395	548	3.11	3.58	C
June.....	630	270	430	2.44	2.72	D
July.....	251	88	159	0.903	1.04	C
August.....	240	152	157	0.892	1.03	B
September.....	250	150	206	1.17	1.30	B
The year.....	2,020	0	312	1.77	24.03	
1910-1911						
October.....	225	0	123	0.699	0.81	B
November.....	152	0	42.9	0.244	0.27	C
December.....	240	0	166	0.943	1.09	B
January.....	180	0	106	0.602	0.69	B
February.....	403	154	258	1.47	1.53	B
March.....	390	249	355	2.02	2.33	B
April.....	2,040	141	926	5.26	5.87	C
May.....	3,300	542	982	5.58	6.43	C
June.....	726	395	568	3.23	3.60	C
July.....	350	154	198	1.12	1.29	C
August.....	243	185	216	1.23	1.42	B
September.....	184	106	128	0.727	0.81	B
The year.....	3,300	0	339	1.93	26.14	
1911-1912						
October.....	142	120	136	0.773	0.89	B
November.....	315	0	140	0.795	0.89	C
December.....	640	210	392	2.23	2.57	D
January.....	410	251	298	1.69	1.95	B
February.....	487	247	367	2.09	2.25	B
March.....	205	100	124	0.704	0.81	D
April.....	2,670	0	1,040	5.91	6.59	D
May.....	1,480	133	574	3.26	3.76	D
June.....	1,200	60	351	1.99	2.22	C
July.....	163	150	154	0.875	1.01	B
August.....	232	147	177	1.01	1.16	B
September.....	217	128	181	1.03	1.15	B
The year.....	2,670	0	326	1.85	25.25	

Monthly discharge of BEAVER RIVER AT STATE DAM NEAR BEAVER RIVER — *Cont'd*  
 [Drainage area, 176 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF	Accu- racy
	Maximum	Minimum	Mean	Per square mile	Depth in inches on drainage area	
1912-1913						
October.....	224	70	144	0.818	0.94	B
November.....	368	22	217	1.23	1.37	C
December.....	675	193	373	2.12	2.44	B
January.....	1,560	193	906	5.15	5.94	B
February.....	630	133	309	1.76	1.83	C
March.....	3,060	193	923	5.24	6.04	B
April.....	1,900	22	888	5.04	5.62	C
May.....	623	154	271	1.54	1.78	C
June.....	552	156	258	1.46	1.63	B
July.....	250	154	220	1.25	1.44	B
August.....	237	173	208	1.18	1.36	B
September.....	168	60	96.8	0.550	0.61	C
The year.....	3,060	22	402	2.28	31.00	
1913-1914						
October.....	196	0	96.2	0.547	0.63	B
November.....	1,240	22	387	2.20	2.46	C
December.....	650	207	327	1.86	2.14	C
January.....	496	164	248	1.41	1.63	B
February.....	374	233	289	1.64	1.71	B
March.....	302	0	146	.820	.95	B
April.....	3,160	0	1,090	6.19	6.91	D
May.....	1,660	139	518	2.94	3.39	C
June.....	217	117	162	.920	1.03	C
July.....	161	153	156	.887	1.02	B
August.....	242	144	206	1.17	1.35	B
September.....	234	146	182	1.03	1.15	B
The year.....	3,160	0	316	1.80	24.37	
1914-1915						
October.....	221	134	181	1.03	1.19	B
November.....	146	0	97.7	0.555	0.62	B
December.....	552	0	267	1.52	1.75	C
January.....	709	207	419	2.38	2.74	C
February.....	893	207	390	2.22	2.31	C
March.....	650	139	266	1.51	1.74	C
April.....	1,750	83	705	4.01	4.47	C
May.....	519	11	216	1.23	1.42	C
June.....	280	39	163	0.926	1.03	C
July.....	280	139	181	1.03	1.19	C
August.....	457	83	223	1.27	1.46	C
September.....	261	83	176	1.00	1.12	C
The year.....	1,750	0	273	1.55	21.04	
1915-1916						
October.....	224	216	220	1.25	1.44	B
November.....	226	215	217	1.23	1.37	B
December.....	430	223	259	1.47	1.70	B
January.....	1,240	305	511	2.90	3.34	C
February.....	1,360	229	514	2.92	3.15	B
March.....	305	217	234	1.33	1.53	B
April.....	1,530	333	962	5.47	6.10	C
May.....	2,210	322	886	5.03	5.80	C
June.....	457	207	328	1.86	2.08	C
July.....	324	111	212	1.21	1.40	C
August.....	251	225	241	1.37	1.58	B
September.....	223	163	195	1.11	1.24	B
The year.....	2,210	111	397	2.26	30.73	

## ST. LAWRENCE RIVER DRAINAGE BELOW LAKE ONTARIO OSWEGATCHIE RIVER

### DESCRIPTION

Oswegatchie river rises in Cranberry lake and the mountains to the southwest in St. Lawrence and Jefferson counties, whence it flows in a general northerly direction into the St. Lawrence river at Ogdensburg, where its drainage area is 1,609 square miles. The river is formed by the junction of the east branch of Oswegatchie river and the west branch of the Oswegatchie river at Talcville and its main tributary below this point is Indian river, which flows through Black lake. Considerable power is developed along all three of these main tributaries and many of the power sites in the lower reaches of the river have also been developed.

### OSWEGATCHIE RIVER NEAR HEUVELTON

**Location.**— $2\frac{1}{2}$  miles above Heuvelton, St. Lawrence county, 2 miles below Rensselaer Falls and 7 miles above the mouth of Indian river.

**Records available.**—June 23 to 30, 1916, inclusive.

**Drainage area.**—Not measured.

**Gage.**—Gage height determined by measuring distance from reference point to water-surface.

**Control.**—Solid rock.

**Discharge measurements.**—Made from a cable just above the gage.

**Winter flow.**—Effects of ice not known; probably will be small.

**Regulation.**—There is some diurnal fluctuation in the stream due to mills at Rensselaer Falls and above. Seasonal flow regulated by storage in Cranberry lake.

**Coöperation.**—Established and maintained by the United States Geological Survey in coöperation with the State Conservation Commission.

A discharge measurement made by wading 50 feet below gage June 26, 1916, by E. D. Burchard gave a discharge of 1,190 second-feet with a gage height of 1.95 feet. Daily gage heights in feet observed during June, 1916, are: 23, 2.32; 24, 2.22; 25, 2.14; 26, 1.98; 27, 1.94; 28, 1.89; 29, 1.89; 30, 1.84.

## OSWEGATCHIE RIVER NEAR OGDENSBURG

**Location.**—At the steel highway bridge known locally as Eel Weir bridge, about  $\frac{1}{2}$  mile below the mouth of the outlet of Black lake and  $5\frac{1}{2}$  miles above the city of Ogdensburg, St. Lawrence county, and the mouth of the river.

**Records available.**—April 22, 1903, to June 30, 1916.

**Drainage area.**—1,580 square miles. (From U. S. Geological Survey water-supply papers.)

**Gage.**—Chain, fastened to the upstream side of the bridge; read twice daily; datum unchanged.

**Control.**—Practically permanent. Channel, rock and partly artificial, the rock having been removed underneath the bridge by blasting, to increase the bridge opening.

**Discharge measurements.**—Usually made from the bridge.

**Regulation.**—Two dams in the vicinity of the gage; one at Heuvelton, about 5 miles above, and one at Rensselaer Falls, 10 miles above.

**Winter flow.**—Discharge relation not affected by ice.

**Extremes of discharge.**—Current period: Maximum stage recorded, 9.9 feet at 5 P. M., April 4, and 8 A. M., April 5; discharge, not determined. Minimum stage recorded, 4.75 feet at 8 A. M., October 1 and November 5; discharge, 560 second feet.

1903–1916: Maximum stage recorded, 9.9 feet on March 31, 1913; discharge, 18,000 second-feet. Minimum stage recorded, 4.5 feet from 8 A. M., June 9, to 5 P. M., June 10, 1915; discharge, 295 second-feet.

**Accuracy.**—Rating curve fairly well developed; open-water curve used throughout the year.

**Coöperation.**—Maintained by the United States Geological Survey in coöperation with the State Conservation Commission.

Discharge measurement of OSWEGATCHIE RIVER NEAR OGDENSBURG, during the nine months ending June 30, 1916

DATE	Made by	Gage height	Discharge
Jan. 28.....	A. H. Davison.....	<i>Feet</i> 7.09	<i>Sec.-ft.</i> 5,720

Daily gage height, in feet, of OSWEGATCHIE RIVER NEAR OGDENSBURG, for the nine months ending June 30, 1916. Joseph H. LaRue, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	4.78	4.90	5.2	6.4	7.4	5.7	8.8	6.6	6.6
2.....	4.88	4.90	5.2	6.3	7.4	5.6	9.4	6.6	6.4
3.....	4.90	4.82	5.25	6.1	7.4	5.65	9.8	6.6	6.2
4.....	5.0	4.80	5.25	6.1	7.4	5.7	9.8	6.4	6.2
5.....	5.1	4.78	5.25	6.1	7.2	5.65	9.8	6.5	5.95
6.....	5.1	4.82	5.3	6.4	7.0	5.7	9.6	6.6	5.95
7.....	5.05	4.90	5.3	6.8	6.8	5.7	9.4	6.5	5.9
8.....	5.15	4.90	5.3	6.8	6.6	5.6	9.0	6.5	5.95
9.....	5.1	4.90	5.3	6.9	6.3	5.55	8.5	6.3	5.9
10.....	5.1	4.88	5.3	6.8	6.2	5.5	8.1	6.2	5.9
11.....	5.1	4.85	5.2	6.8	6.2	5.4	8.0	6.0	5.85
12.....	5.1	4.85	5.1	6.6	5.95	5.4	7.8	5.8	5.8
13.....	5.2	4.90	5.1	6.7	5.8	5.35	7.7	5.75	5.8
14.....	5.1	4.82	5.1	6.8	5.8	5.3	7.2	5.6	5.7
15.....	5.1	4.80	5.0	6.8	5.75	5.3	7.2	5.6	5.65
16.....	5.1	4.85	5.0	6.6	5.55	5.3	7.4	5.5	5.65
17.....	5.1	4.80	5.0	6.7	5.4	5.25	7.5	5.55	5.9
18.....	5.1	4.80	5.0	6.6	5.35	5.2	7.4	6.3	5.85
19.....	5.1	4.80	5.05	6.4	5.3	5.2	7.2	6.8	5.8
20.....	5.1	5.35	5.1	6.4	5.4	5.2	7.0	7.8	6.0
21.....	5.1	5.05	5.1	6.2	5.3	5.2	6.8	8.0	5.85
22.....	5.1	4.95	5.1	6.2	5.3	5.15	6.8	8.3	5.8
23.....	5.1	5.0	5.15	6.7	5.35	5.15	6.7	8.4	5.8
24.....	5.1	5.0	5.3	7.0	5.3	5.2	6.7	8.4	5.8
25.....	5.0	5.05	5.35	6.6	5.3	5.2	6.8	8.0	5.9
26.....	5.0	5.2	5.55	6.6	5.3	5.2	6.8	7.7	5.75
27.....	4.98	5.2	5.8	7.0	5.35	5.25	6.7	7.4	5.65
28.....	4.90	5.1	5.95	7.1	5.3	5.4	6.6	7.2	5.5
29.....	4.90	5.1	6.4	7.2	5.7	6.0	6.6	6.9	5.4
30.....	4.90	5.2	6.6	7.2	.....	6.8	6.6	6.8	5.4
31.....	4.90	.....	6.4	7.3	.....	8.0	.....	6.7	.....

NOTE.— Discharge relation probably not affected by ice.

Daily discharge, in second-feet, of OSWEGATCHIE RIVER NEAR OGDENSBURG, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	596	750	1,200	3,700	6,360	2,100	10,600	.....	.....
2.....	724	750	1,200	3,460	6,360	1,900	12,500	.....	.....
3.....	750	616	1,280	2,980	6,360	2,000	13,700	.....	.....
4.....	890	620	1,280	2,980	6,360	2,100	.....	.....	.....
5.....	1,040	596	1,280	2,980	5,800	2,000	.....	.....	.....
6.....	1,040	646	1,360	3,700	5,250	2,100	.....	.....	.....
7.....	965	750	1,360	4,720	4,720	2,100	.....	.....	.....
8.....	1,120	750	1,360	4,720	4,200	1,900	.....	.....	.....
9.....	1,010	750	1,360	4,980	3,460	1,800	.....	.....	.....
10.....	1,040	724	1,360	4,720	3,220	1,710	.....	.....	.....
11.....	1,040	685	1,200	4,720	3,220	1,530	.....	.....	.....
12.....	1,010	685	1,040	4,200	2,640	1,530	.....	.....	.....
13.....	1,200	750	1,040	4,460	2,310	1,440	.....	.....	.....
14.....	1,040	646	1,040	4,720	2,310	1,360	.....	.....	.....
15.....	1,040	620	890	4,720	2,200	1,360	.....	.....	.....
16.....	1,040	685	890	4,200	1,800	1,360	.....	.....	.....
17.....	1,040	620	890	4,460	1,530	1,280	.....	.....	.....
18.....	1,040	620	890	4,200	1,440	1,200	.....	.....	.....
19.....	1,040	620	965	3,700	1,360	1,200	.....	.....	.....
20.....	1,040	1,440	1,040	3,700	1,530	1,200	.....	.....	.....
21.....	1,040	965	1,040	3,220	1,360	1,200	.....	.....	.....
22.....	1,040	820	1,040	3,220	1,360	1,120	.....	.....	.....
23.....	1,040	890	1,120	4,460	1,440	1,120	.....	.....	.....
24.....	1,040	890	1,360	5,250	1,360	1,200	.....	.....	.....
25.....	890	965	1,440	4,200	1,360	1,200	.....	.....	.....
26.....	890	1,200	1,800	4,200	1,360	1,200	.....	.....	.....
27.....	862	1,200	2,310	5,250	1,440	1,280	.....	.....	.....
28.....	750	1,040	2,640	5,520	1,360	1,530	.....	.....	.....
29.....	750	1,040	3,700	5,800	2,100	2,750	.....	.....	.....
30.....	750	1,200	4,200	5,800	.....	4,720	.....	.....	.....
31.....	750	.....	3,700	6,080	.....	8,150	.....	.....	.....
Mean....	954	819	1,530	4,360	2,950	1,890	.....	.....	.....

NOTE.— Discharge measurements made during 1916 indicate a change in the rating, probably beginning April 4. Enough measurements have not been made to define a new rating.

Monthly discharge of OSWEGATCHIE RIVER NEAR OGDENSBURG, for the nine months ending June 30, 1916

(Drainage area, 1,580 square miles)

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF	Accu- racy
	Maximum	Minimum	Mean	Per square mile	Depth in inches on drainage area	
October.....	1,200	596	954	0.604	0.70	C
November.....	1,440	596	819	0.518	0.58	C
December.....	4,200	890	1,530	0.968	1.12	B
January.....	6,080	2,980	4,360	2.76	3.18	B
February.....	6,360	1,360	2,950	1.87	2.02	B
March.....	8,150	1,120	1,890	1.20	1.38	B



**EAST BRANCH OF OSWEGATCHIE RIVER AT NEWTON FALLS**

**Location.**— 600 feet below the lower dam of the Newton Falls Paper Company in the village of Newton Falls, St. Lawrence county, 4 miles above the mouth of the Little river and 10 miles below the outlet of Cranberry lake.

**Records available.**— October 6, 1912, to June 30, 1916.

**Drainage area.**— 166 square miles.

**Gage.**— Vertical staff gage, read twice daily.

**Control.**— Bottom consists of small boulders and gravel, covered with waste from the pulp-mill.

**Discharge measurements.**—Made by wading at low stages and from a cable 30 feet above the gage during high water.

**Winter flow.**— Ice effect is diminished by the disturbance of the water at the paper-mill.

**Regulation.**— The dams of the paper-mill cause some daily fluctuation, probably not enough to affect the accuracy of the records. Seasonal flow is largely controlled by dam at Cranberry lake. Range of gage heights probably not more than 5 feet.

**Extremes of discharge.**— Current period: Maximum stage recorded, 5.6 feet at 5:30 p. m., May 18; discharge, 1,860 second-feet. Minimum stage is reached every Sunday during a large part of the year, when the paper-mill is shut down. Gage height, 0.0; discharge, 22 second-feet, due to leakage.

1912–1916: Maximum stage recorded, 6.1 feet at 5:15 p. m., March 28, 1913; discharge, approximately 2,200 second-feet.<sup>a</sup>

**Accuracy.**— Discharge curve well defined for ordinary stages. No high-water measurements have yet been made. Estimates good.

**Coöperation.**— Established and maintained by the United States Geological Survey in coöperation with the State Conservation Commission.

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<sup>a</sup> This discharge is based on a new rating and supersedes the value previously published.

## Discharge measurements of OSWEGATCHIE RIVER AT NEWTON FALLS, during the nine months ending June 30, 1916

DATE	Made by	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>
Dec. 9.....	A. H. Davison.....	1.98	308
April 28.....	O. W. Hartwell.....	3.90	960
April 28.....	O. W. Hartwell.....	3.92	945

## Daily gage height, in feet, of EAST BRANCH OF OSWEGATCHIE RIVER AT NEWTON FALLS, for the nine months ending June 30, 1916. Alfred Renaud, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	2.0	1.5	2.0	2.3	3.0	2.4	2.9	4.0	2.2
2.....	2.2	1.8	2.0	1.4	3.1	2.3	2.5	3.8	2.0
3.....	.95	1.8	2.2	2.2	2.7	2.2	2.8	3.8	2.0
4.....	1.7	1.8	2.3	2.3	2.5	2.3	2.1	3.9	2.4
5.....	2.0	1.9	1.3	2.2	2.4	1.25	1.8	3.8	3.4
6.....	2.0	2.2	1.9	2.2	2.0	2.0	1.7	3.6	2.7
7.....	2.0	1.2	2.4	2.2	2.4	2.1	1.7	3.3	2.0
8.....	2.1	1.6	2.2	2.4	2.4	2.0	1.7	3.4	2.0
9.....	2.0	1.9	2.0	2.4	2.3	2.0	1.1	3.2	2.0
10.....	.90	1.9	2.1	2.6	2.3	2.0	1.45	3.0	2.0
11.....	1.7	1.8	2.3	2.5	2.3	2.0	1.6	.....	1.0
12.....	2.0	1.7	1.25	2.4	2.3	1.7	1.5	.....	1.9
13.....	2.0	1.7	1.7	2.6	2.2	2.0	1.6	.....	2.2
14.....	2.0	1.1	2.0	2.5	2.5	2.0	1.8	.....	2.3
15.....	2.0	1.35	2.0	2.4	2.4	2.2	2.2	.....	2.3
16.....	2.0	1.6	2.0	2.5	2.4	2.3	2.3	1.9	2.5
17.....	.65	1.6	2.0	2.5	2.2	2.3	2.9	3.3	2.4
18.....	1.4	1.5	2.0	2.4	2.2	2.3	2.8	5.3	2.1
19.....	2.0	1.8	1.15	2.4	2.4	1.45	2.8	5.3	2.4
20.....	2.0	1.9	1.7	2.4	1.35	2.4	2.8	5.4	2.4
21.....	2.0	1.1	1.9	2.4	1.9	2.7	3.1	5.1	2.4
22.....	2.0	1.6	1.9	2.8	2.0	3.0	3.3	5.0	2.4
23.....	2.0	1.7	2.0	3.0	2.0	3.1	3.4	4.9	2.5
24.....	.55	1.5	1.6	2.8	2.0	3.0	3.8	4.6	2.4
25.....	1.4	1.5	.80	2.8	2.0	2.9	4.0	4.2	1.8
26.....	1.8	1.8	.90	2.8	2.0	2.9	4.0	4.0	2.2
27.....	1.8	2.0	2.1	2.8	1.4	3.2	4.0	3.8	2.1
28.....	1.8	.85	2.2	2.9	2.4	3.1	4.0	3.4	2.1
29.....	1.8	1.7	2.0	3.1	2.4	3.3	3.9	3.0	1.9
30.....	1.8	2.0	2.2	2.7	.....	3.4	3.9	3.2	1.8
31.....	1.1	.....	2.3	2.8	.....	2.9	.....	2.9	.....

NOTE.— Discharge relation probably not affected by ice. Mean daily gage height computed from two observations per day, weighted as indicated by observer's records of operation of wheels at paper-mills above the station.

**Daily discharge, in second-feet, of EAST BRANCH OF OSWEGATCHIE RIVER AT NEWTON FALLS, for the nine months ending June 30, 1916**

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	304	205	304	376	588	402	554	982	350
2.....	350	262	304	188	622	376	430	894	304
3.....	119	262	350	350	490	350	522	894	304
4.....	242	262	376	376	430	376	326	938	402
5.....	304	282	171	350	402	163	262	894	732
6.....	304	350	282	350	304	304	242	810	490
7.....	304	155	402	350	402	326	242	694	304
8.....	326	223	350	402	402	304	242	732	304
9.....	304	282	304	402	376	304	140	658	304
10.....	112	282	326	460	376	304	196	588	304
11.....	242	262	376	430	376	304	223	554	126
12.....	304	242	163	402	376	242	205	506	282
13.....	304	242	242	460	350	304	223	475	350
14.....	304	140	304	430	430	304	262	282	376
15.....	304	180	304	402	402	350	350	282	376
16.....	304	223	304	430	402	376	376	282	430
17.....	81	223	304	430	350	376	554	694	402
18.....	188	205	304	402	350	376	522	1,680	326
19.....	304	262	148	402	402	196	522	1,680	402
20.....	304	282	242	402	180	402	522	1,740	402
21.....	304	140	282	402	282	490	622	1,560	402
22.....	304	223	282	522	304	588	694	1,500	402
23.....	304	242	304	588	304	622	732	1,440	430
24.....	70	205	223	522	304	588	894	1,270	402
25.....	188	205	99	522	304	554	982	1,070	262
26.....	262	262	112	522	304	554	982	982	350
27.....	262	304	326	522	188	658	982	894	326
28.....	262	106	350	554	402	622	982	732	326
29.....	262	242	304	622	402	694	938	588	282
30.....	262	304	350	490	.....	732	938	658	262
31.....	140	.....	376	522	.....	554	.....	554	.....
Mean.....	256	235	286	438	372	422	522	887	387

NOTE.— Daily discharge, May 11 to 15, inclusive, estimated.

**Monthly discharge of EAST BRANCH OF OSWEGATCHIE RIVER AT NEWTON FALLS, for the nine months ending June 30, 1916**

(Drainage area, 166 square miles)

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF		Accuracy
	Maximum	Minimum	Mean	Per square mile	Depth in inches on drainage area		
October.....	350	70	256	1.54	1.78	A	
November.....	350	106	235	1.42	1.58	A	
December.....	402	99	286	1.72	1.98	A	
January.....	622	188	438	2.64	3.04	A	
February.....	622	180	372	2.24	2.42	A	
March.....	732	163	422	2.54	2.93	A	
April.....	982	140	522	3.14	3.50	A	
May.....	1,740	282	857	5.34	6.16	B	
June.....	732	126	357	2.15	2.40	A	

NOTE.— The minimum daily discharge came on Sunday, in each month, except December, when it came on a holiday.

## RAQUETTE RIVER

### DESCRIPTION

Raquette river rises in northern Hamilton county, flows almost north through a long narrow valley to St. Lawrence river. Its total length from its source to its confluence with the St. Lawrence, near the most northern point of the state, is 162 miles. The drainage area at the mouth of the river is 1,269 square miles.

Its source is on an elevated plateau about 1,600 feet above sea-level. The upper part of the basin includes many acres of swamp land, as well as a large area of lakes and ponds, including Tupper lake, Little Tupper lake, Long lake, Round lake, Blue Mountain lake, Forked lake and Raquette lake.

The high region receives a heavy rainfall, the mean annual amounting to about forty-eight inches, or about ten inches above the mean for the state.

The course of the river through the mountains is marked by many falls and rapids, but as yet only 400 feet of the 1,400 feet of fall in the river below Tupper lake has been developed. The river is characterized by tremendous fluctuations between the maximum and minimum flow and is in great need of artificial regulation if the possibilities of power development are to be fully realized.

### RAQUETTE RIVER AT PIERCEFIELD

**Location.**—About three-fourths mile above the head of Black rapids and one-half mile below the dam of the International Paper Company at Piercefield, St. Lawrence county.

**Records available.**—August 20, 1908, to June 30, 1916.

**Drainage area.**—723 square miles. (All but 16 square miles measured on United States Geological Survey topographic maps.)

**Gage.**—August 20, 1908, to September 3, 1910, vertical staff fastened to a large pine stump. September 4 to December 31, 1910, chain gage fastened to same stump and having the same datum. January 1, 1911, to December 31, 1912, same chain gage with its datum 2 feet lower. During 1912 an automatic water-stage recorder was installed in a galvanized sheet-iron house 4 feet by 6 feet, inside dimensions, over a concrete well 3½ feet square, inside dimensions, and 15 feet deep. This well is connected with the river by a 4-inch cast-iron pipe 60 feet long. A shear gate-valve is set at the inner end of the pipe for use in cleaning the well.

The outer end of the pipe terminates in a concrete box 1 foot square, inside dimensions. This box is connected with the river by three small intake pipes 2 inches in diameter with a screen protection over their outer ends. This special construction was deemed necessary to keep wood pulp out of the intake pipe.

**Control.**—Head of Black rapids, the channel opposite the gage is a deep pond having no perceptible velocity.

**Discharge measurements.**—Made from a cable just above Black rapids at the section formerly used for boat measurements.

**Winter flow.**—Rapids, forming control, rarely freeze and measurements made with ice present indicate that the discharge relation is not affected by ice.

**Regulation.**—Low-water flow controlled by dam of the International Paper Company. The numerous lakes in the upper part of the drainage basin afford considerable storage, most of which is regulated.

**Extremes of discharge.**—Current period: Maximum stage from water-stage recorder, 9.63 feet at 9 A. M., May 22; discharge, 4,780 second-feet. Minimum stage from water-stage recorder, 2.30 feet at 8:00 A. M., November 14; discharge, 186 second-feet.

1908–1916: Maximum stage recorded from water-stage recorder, 11.68 feet at 3 A. M., April 1, 1913; discharge, 7,100 second-feet. Minimum stage from water-stage recorder, 0.85 foot at 11 A. M., September 2, 1913; discharge, approximately 10 second-feet.

**Accuracy.**—Rating curve well defined. With fluctuations, due to regulation recorded by automatic gage, estimates are very good.

**Coöperation.**—Maintained by the United States Geological Survey in coöperation with the State Conservation Commission.

Discharge measurements of RAQUETTE RIVER AT PIERCEFIELD, during the nine months ending June 30, 1916

DATE	Made by	Gage height	Discharge
		Feet	Sec.-ft.
Jan. 13.....	A. H. Davison.....	5.74	1,230
Jan. 13.....	A. H. Davison.....	5.72	1,250
Jan. 23.....	A. H. Davison.....	5.22	263
Jan. 23.....	A. H. Davison.....	3.10	239
May 4.....	A. H. Davison.....	9.88	4,610
May 4.....	A. H. Davison.....	9.38	4,450
May 6.....	A. H. Davison.....	9.41	4,610
May 25.....	A. H. Davison.....	9.43	4,560

# GAGING OF STREAMS: ST. LAWRENCE DRAINAGE 197

Daily discharge, in second-feet, of RAQUETTE RIVER AT PIERCEFIELD, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	530	355	686	.....	.....	.....	1,320	4,540	3,440
2.....	652	562	702	.....	.....	.....	1,290	4,540	3,340
3.....	308	562	718	.....	.....	.....	2,020	4,540	3,240
4.....	335	545	700	.....	.....	.....	2,110	4,540	2,840
5.....	562	e 575	138	.....	.....	.....	2,380	4,540	3,140
6.....	562	e 575	425	.....	.....	.....	2,470	4,540	e 2,910
7.....	580	130	715	.....	.....	1,630	2,560	4,240	e 2,750
8.....	580	339	729	.....	.....	1,600	2,650	4,340	e 2,630
9.....	485	545	718	.....	.....	1,630	2,640	4,140	e 2,550
10.....	223	545	e 720	1,180	.....	1,600	2,740	4,040	e 2,430
11.....	368	e 530	e 715	1,190	.....	1,600	2,840	3,840	1,780
12.....	580	e 540	e 245	e 1,200	.....	761	2,840	3,640	2,110
13.....	598	e 545	e 575	1,190	.....	1,430	2,840	3,540	2,020
14.....	580	119	e 725	1,160	.....	1,600	2,740	3,340	1,820
15.....	562	309	e 740	1,130	.....	1,460	2,840	3,310	1,780
16.....	440	515	e 730	.....	.....	1,350	2,730	3,340	1,740
17.....	227	e 525	e 740	.....	.....	1,380	3,240	3,540	1,600
18.....	367	e 500	e 700	.....	.....	1,380	3,140	3,840	739
19.....	562	e 515	e 355	.....	.....	644	3,040	4,040	1,370
20.....	580	330	761	.....	.....	1,120	3,140	4,240	1,660
21.....	562	232	674	.....	.....	1,160	3,140	4,340	1,420
22.....	562	304	679	.....	.....	1,290	3,340	4,640	1,190
23.....	485	545	704	.....	.....	1,190	3,440	4,750	1,190
24.....	235	530	815	1,160	.....	1,160	3,840	4,610	1,320
25.....	376	e 545	453	1,250	.....	1,160	4,340	4,540	651
26.....	562	e 575	471	1,280	.....	542	4,340	4,440	1,120
27.....	562	e 550	.....	1,280	.....	1,010	4,340	4,340	1,060
28.....	562	285	.....	1,630	.....	1,070	4,440	3,940	781
29.....	580	696	.....	1,860	.....	874	4,440	3,940	779
30.....	435	661	.....	1,780	.....	1,050	4,340	3,740	775
31.....	293	.....	.....	e 1,950	.....	1,280	.....	3,610	.....
Mean....	480	469	681	1,170	1,700	1,310	3,050	4,120	1,870

e Estimated.

NOTE.— Discharge for the following periods estimated: December 27 to 31, 975; January 1 to 9, 978; January 16 to 23, 1,040; February 1 to 10, 1,910; February 11 to 20, 1,570; February 21 to 29, 1,600; March 1 to 6, 1,600 second-feet. Daily discharge for other days determined by discharge integration.

Monthly discharge of RAQUETTE RIVER AT PIERCEFIELD, for the nine months ending June 30, 1916

[Drainage area, 723 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF	Accu- racy
	Maximum	Minimum	Mean	Per square mile	Depth in inches on drainage area	
October.....	652	α 223	480	0.664	0.77	A
November.....	696	α 119	469	0.649	0.72	A
December.....		α 138	684	0.946	1.09	C
January.....	1,950		1,170	1.62	1.87	C
February.....			1,700	2.35	2.53	D
March.....		α 542	1,310	1.81	2.09	B
April.....	4,440	α 1,290	3,050	4.22	4.71	A
May.....	4,750	3,340	4,120	5.70	6.57	A
June.....	3,440	α 651	1,870	2.59	2.89	A

a Sunday.

**RAQUETTE RIVER AT MASSENA SPRINGS**

**Location.**— At concrete highway bridge at Massena Springs, St. Lawrence county, 8 miles below Raymondville and 10 miles above the mouth of the stream.

**Records available.**— September 21, to October 17, 1903, and April 9, 1904, to June 30, 1916.

**Drainage area.**— 1,200 square miles. (Computed by engineers of State of New York Conservation Commission.)

**Gage.**— Original gage was a vertical staff fastened to a stone wall on the left bank about 50 feet upstream from the present bridge. This was replaced by a standard chain gage on August 16, 1906, fastened to an old highway bridge located just above the present bridge. The datum of the chain gage was set 1.00 foot lower than that of the staff gage to prevent negative gage heights. On February 2, 1912, the chain gage was reset on the present concrete bridge at such a datum that readings should be comparable with those at the former location.

**Control.**— Fairly permanent; bed of river of coarse gravel and small boulders.

**Discharge measurements.**— Made from bridge.

**Regulation.**— The operation of a number of power-plants above the station has marked effect on the low-water discharge of the stream. These plants are usually run for 24-hour power, but are closed on Sundays. The effect of the Sunday closing is shown in the stream for several days.

**Winter flow.**— Discharge relation affected by ice. Gage observation suspended during frozen period.

**Extremes of discharge.**— Current period: Maximum stage recorded, 12.83 feet at 3:30 P. M., April 1; discharge, 14,400 second-feet. Minimum stage recorded 1.13 feet at 8:30 A. M., October 4; discharge, approximately 21.2 second-feet.

1903-1916: Maximum stage recorded, 14.2 feet, between 9 A. M. and 11 A. M., March 31, 1914; discharge, 16,500 second-feet. Minimum stage recorded, 0.8 foot at 8:30 A. M., September 21, 1913; discharge, approximately 50 second-feet.

**Accuracy.**— Determinations of discharge for low-water periods may be considerably in error as a result of regulation of flow.

**Coöperation.**— Maintained by the United States Geological Survey in coöperation with the State Conservation Commission.

Discharge measurements of RAQUETTE RIVER AT MASSENA SPRINGS, during the nine months ending June 30, 1916

DATE	Made by	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>
May 2.....	A. H. Davison.....	7.00	5,380
May 2.....	A. H. Davison.....	6.98	5,360
May 22.....	A. H. Davison.....	7.42	6,120
May 22.....	A. H. Davison.....	7.44	6,180

Daily gage height, in feet, of RAQUETTE RIVER AT MASSENA SPRINGS, for the nine months ending June 30, 1916. Miss Vivian McDonald, Observer

DAY.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	2.8	2.9	2.7	.....	.....	.....	12.8	7.0	6.4
2.....	3.6	3.5	2.7	.....	.....	.....	11.9	7.4	6.0
3.....	1.5	2.5	2.8	.....	.....	.....	10.4	7.3	5.8
4.....	1.2	2.25	3.2	.....	.....	.....	9.1	7.2	5.6
5.....	1.7	2.1	3.3	.....	.....	.....	7.9	7.4	5.6
6.....	2.0	2.5	3.6	.....	.....	.....	7.2	7.2	5.7
7.....	2.15	2.9	3.6	.....	.....	.....	6.2	6.8	5.5
8.....	2.6	3.0	3.6	.....	.....	.....	6.4	6.4	5.2
9.....	2.6	2.7	3.1	.....	.....	.....	6.8	6.6	5.1
10.....	2.4	2.5	3.7	.....	.....	.....	5.5	6.4	5.2
11.....	2.6	2.5	4.7	.....	.....	.....	5.5	6.5	5.0
12.....	2.9	2.5	.....	.....	.....	.....	5.5	6.6	4.8
13.....	3.0	2.8	.....	.....	.....	.....	6.0	6.0	5.0
14.....	2.7	3.5	.....	.....	.....	.....	6.5	6.2	5.6
15.....	2.8	3.0	.....	.....	.....	.....	5.4	5.9	4.8
16.....	3.2	3.4	.....	.....	.....	.....	7.1	5.5	4.6
17.....	2.3	3.6	.....	.....	.....	.....	6.4	6.2	4.6
18.....	2.7	3.8	.....	.....	.....	.....	6.8	6.6	5.5
19.....	3.0	2.9	.....	.....	.....	.....	6.5	7.6	5.2
20.....	3.4	3.0	.....	.....	.....	.....	6.7	7.0	4.3
21.....	3.8	2.7	.....	.....	.....	.....	5.9	6.8	4.2
22.....	3.8	2.6	.....	.....	.....	.....	6.6	7.4	4.0
23.....	3.9	2.8	.....	.....	.....	.....	6.8	7.8	4.1
24.....	3.6	3.2	.....	.....	.....	.....	7.0	7.6	3.7
25.....	3.6	3.0	.....	.....	.....	.....	7.4	7.2	3.5
26.....	3.2	3.5	.....	.....	.....	.....	7.0	6.8	3.3
27.....	3.6	3.0	.....	.....	.....	.....	6.8	6.9	3.6
28.....	3.2	2.8	.....	.....	.....	.....	7.5	6.6	3.5
29.....	3.5	3.2	.....	.....	.....	.....	7.7	6.6	3.4
30.....	3.0	2.6	.....	.....	.....	12.5	7.2	6.8	3.4
31.....	3.2	.....	.....	.....	.....	12.4	.....	6.6	.....

NOTE.—Discharge relation affected by ice, December 10 to March 29, inclusive. Gage observation suspended, December 12 to March 29.



Daily discharge, in second-feet, of RAQUETTE RIVER AT MASSENA SPRINGS, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	1,060	1,140	990				14,400	5,450	4,680
2.....	1,680	1,600	990				12,900	5,970	4,200
3.....	325	850	1,060				10,500	5,840	3,980
4.....	230	680	1,360				8,440	5,710	3,760
5.....	405	600	1,440				6,670	5,970	3,760
6.....	545	850	1,680				5,710	5,710	3,870
7.....	630	1,140	1,680				4,440	5,190	3,650
8.....	920	1,210	1,680				4,680	4,680	3,320
9.....	920	990	1,280				5,190	4,930	3,220
10.....	785	850					3,650	4,680	3,320
11.....	920	850					3,650	4,800	3,120
12.....	1,140	850					3,650	4,930	2,920
13.....	1,210	1,060					4,200	4,200	3,120
14.....	990	1,600					4,800	4,440	3,760
15.....	1,060	1,210					3,540	4,090	2,920
16.....	1,360	1,520					5,580	3,650	2,720
17.....	720	1,680					4,680	4,440	2,720
18.....	990	1,850					5,190	4,930	3,650
19.....	1,210	1,140					4,800	6,250	3,320
20.....	1,520	1,210					5,060	5,450	2,440
21.....	1,850	990					4,090	5,190	2,350
22.....	1,850	920					4,930	5,970	2,170
23.....	1,940	1,060					5,190	6,530	2,360
24.....	1,680	1,360					5,450	6,250	1,900
25.....	1,680	1,210					5,970	5,710	1,740
26.....	1,360	1,600					5,450	5,190	1,580
27.....	1,680	1,210					5,190	5,320	1,820
28.....	1,360	1,060					6,110	4,930	1,740
29.....	1,600	1,360					6,390	4,930	1,660
30.....	1,210	920				13,900	5,710	5,190	1,680
31.....	1,360					13,700		4,630	.....
Mean.....	1,170	1,150	1,220	2,610	2,510	2,600	5,870	2,510	2,910

NOTE.— Discharge relation affected by ice, December 10 to March 29, inclusive. Mean discharge for this period determined by estimating the inflow below Piercefield from records of adjacent streams. Mean discharge, December 10 to 31, estimated, 1,160 second-feet. March 1 to 29, estimated, 1,830 second-feet. New rating used, beginning March 30.

Monthly discharge of RAQUETTE RIVER AT MASSENA SPRINGS, for the nine months ending June 30, 1916

[Drainage area, 1,200 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF Depth in inches on drainage area	Accu- racy
	Maximum	Minimum	Mean	Per square mile		
October.....	1,940	230	1,170	0.975	1.12	C
November.....	1,850	600	1,150	0.958	1.07	C
December.....			1,220	1.02	1.18	D
January.....			2,610	2.18	2.51	D
February.....			2,510	2.09	2.25	D
March.....			2,600	2.17	2.50	D
April.....	14,400	3,540	5,870	4.89	5.46	B
May.....	6,530	3,650	5,210	4.34	5.00	B
June.....	4,680	1,580	2,910	2.42	2.70	C

## ST. REGIS RIVER

### DESCRIPTION

St. Regis river has its source in several small streams and lakes in the western part of Franklin county at an elevation of about 1,500 feet above the sea. It first flows in a northwesterly direction for about 40 miles and then somewhat east of north for about 28 miles to its mouth, in the St. Lawrence river near the state line. Its drainage area comprises 664 square miles (State Water Supply Commission).

The upper portion of its watershed consists of swamp and of mountains from which most of the forest has been cut. Upon leaving the plateau the stream descends for 10 or 15 miles through a rugged country by a succession of steep rapids and precipitous falls to the lowlands bordering the St. Lawrence. Only a few of the excellent opportunities for developing power in the descent have as yet been utilized. From the foot of the hills to the St. Lawrence, the slope of the river is moderate and rock outcrop not frequent, consequently favorable sites for power-plants are scarce.

### ST. REGIS RIVER AT BRASHER CENTER

**Location.**—At the steel highway bridge in the village of Brasher Center, St. Lawrence county, 5 miles downstream from Brasher Falls,  $6\frac{1}{4}$  miles below the junction of east and west branches of St. Regis river and about 12 miles above the mouth.

**Records available.**—August 22, 1910, to June 30, 1916.

**Drainage area.**—621 square miles. (Measured on post-route map.)

**Gage.**—Chain, fastened to downstream side of bridge; read twice daily; datum unchanged.

**Control.**—Fairly permanent. Channel very rough; composed of gravel and large boulders.

**Discharge measurements.**—At low stages made by wading about 500 feet above the bridge, at high stages made from the bridge.

**Winter flow.**—Discharge relation affected by ice. Discharge determined by frequent discharge measurements and climatologic data.

**Extremes of discharge.**— Current period: Maximum stage recorded, 10.2 feet at 8 A. M., March 31 and April 2; discharge relation affected by ice; discharge estimated, 13,800 second-feet. Minimum stage recorded, 4.0 feet at 7 A. M., October 21, 22 and 30; discharge, 250 second-feet.

1910-1916: Maximum stage recorded, 9.1 feet at 7 A. M., March 27, 1914; discharge, 16,200 second-feet. Minimum stage recorded, 3.75 feet at 5 P. M., August 9, 7 A. M. and 5 P. M., August 10, and 7 A. M., August 12, 1914; discharge, 105 second-feet.

**Accuracy.**— Discharge rating curve well developed; estimates good.

**Coöperation.**— Established and maintained by the United States Geological Survey in coöperation with the State Conservation Commission.

**Emendation.**— Discharge for March to September, inclusive, 1915, is superseded by data herein.

Daily gage height, in feet, of ST. REGIS RIVER AT BRASHER CENTER, for the nine months ending June 30, 1916. Joseph Vanier, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	4.30	4.42	4.32	5.2	5.65	6.8	8.4	5.1	5.0
2.....	4.22	4.45	4.30	5.15	5.55	6.6	9.2	5.05	4.9
3.....	4.25	4.38	4.25	5.0	5.55	6.5	7.9	5.15	4.9
4.....	4.32	4.30	4.22	5.55	5.75	6.4	7.2	5.25	4.9
5.....	4.5	4.32	4.28	4.9	5.65	6.2	5.85	5.05	4.9
6.....	4.9	4.32	4.25	6.0	5.1	6.0	5.65	5.2	4.7
7.....	4.8	4.22	4.24	6.2	4.9	5.95	5.55	5.1	4.6
8.....	4.75	4.25	4.22	7.3	4.75	5.85	5.4	5.0	4.5
9.....	4.55	4.28	4.22	7.6	5.8	5.65	5.35	4.85	4.7
10.....	4.38	4.20	4.30	6.5	5.65	5.55	5.2	4.85	4.7
11.....	4.30	4.28	4.65	5.75	6.2	5.65	5.3	4.9	4.5
12.....	4.28	4.28	4.45	6.9	6.8	5.55	5.4	4.7	4.85
13.....	4.22	4.22	4.45	8.0	6.8	5.5	5.4	4.7	4.8
14.....	4.12	4.28	4.38	7.2	6.8	5.6	5.5	4.55	4.7
15.....	4.20	4.18	4.48	7.8	6.6	5.65	5.6	4.6	4.85
16.....	4.20	4.45	4.8	7.0	6.3	5.6	5.8	4.65	4.7
17.....	4.12	4.5	4.65	8.0	5.75	5.65	5.65	5.3	4.75
18.....	4.12	4.55	4.5	8.2	5.4	5.5	5.7	6.8	4.8
19.....	4.12	4.42	4.7	8.6	5.55	5.55	5.6	6.8	4.9
20.....	4.10	4.42	4.75	7.8	6.0	5.7	5.65	6.3	5.0

Daily gage height, in feet, of ST. REGIS RIVER AT BRASHER CENTER, for the nine months ending June 30, 1916 — *Continued*

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
21.....	4.05	4.65	4.9	6.2	6.4	5.5	5.55	6.0	5.1
22.....	4.02	4.65	4.65	6.7	6.2	5.45	5.4	5.8	4.9
23.....	4.22	4.6	4.55	7.0	6.3	5.4	5.7	5.55	4.75
24.....	4.20	4.5	4.75	6.2	6.2	5.5	5.65	5.4	6.6
25.....	4.20	4.35	4.7	5.85	5.45	5.5	5.65	5.2	6.5
26.....	4.18	4.30	5.1	5.65	5.9	5.45	5.75	5.1	6.5
27.....	4.08	4.30	5.05	6.3	6.6	5.65	5.35	5.0	6.42
28.....	4.12	4.30	5.0	6.4	6.8	6.0	5.5	4.85	6.30
29.....	4.06	4.32	5.1	7.2	6.8	7.6	5.25	4.9	6.6
30.....	4.05	4.35	5.1	6.4	.....	8.2	5.1	5.0	6.65
31.....	4.30	.....	5.55	5.95	.....	9.7	.....	5.1	.....

NOTE.—Discharge relation affected by ice, December 10 to April 4, inclusive. Gage height observed on new staff gage, beginning June 24.

Daily discharge, in second-feet, of ST. REGIS RIVER AT BRASHER CENTER, for the year ending September 30, 1915

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1.....	283	482	600	.....	.....	.....	570	1,390	491	330	625	494
2.....	258	410	655	.....	.....	.....	570	1,480	390	330	491	458
3.....	258	446	820	.....	.....	.....	551	1,390	458	315	390	390
4.....	200	550	820	.....	.....	.....	522	1,480	330	282	407	375
5.....	128	500	1,070	.....	.....	.....	680	1,480	315	239	458	302
6.....	152	428	520	.....	.....	.....	930	1,570	282	330	475	302
7.....	140	395	710	.....	.....	.....	1,220	1,140	263	740	475	302
8.....	128	395	940	.....	.....	.....	1,480	1,390	375	592	475	375
9.....	170	482	940	.....	.....	.....	1,860	2,080	315	592	458	522
10.....	350	820	655	.....	.....	.....	2,190	1,220	302	680	740	658
11.....	350	372	500	.....	.....	.....	4,440	1,300	302	658	800	551
12.....	200	350	600	.....	.....	.....	6,250	1,220	475	494	658	458
13.....	185	322	372	.....	.....	.....	5,110	1,070	800	407	551	390
14.....	152	395	395	.....	.....	.....	4,770	658	930	407	475	458
15.....	190	500	.....	.....	.....	432	5,470	522	930	390	375	458
16.....	240	600	.....	.....	.....	680	3,080	740	1,000	494	352	352
17.....	309	940	.....	.....	.....	432	2,430	658	800	475	658	315
18.....	410	710	.....	.....	.....	522	2,190	551	625	625	1,000	330
19.....	446	1,070	.....	.....	.....	625	1,970	352	592	1,860	930	315
20.....	1,220	600	.....	.....	.....	432	1,660	390	494	1,660	680	250
21.....	940	520	.....	.....	.....	390	1,970	458	494	1,390	592	315
22.....	464	655	.....	.....	.....	475	1,760	800	458	1,140	1,000	263
23.....	410	600	.....	.....	.....	625	1,300	625	407	800	2,080	282
24.....	380	580	.....	.....	.....	1,070	1,140	458	458	551	2,080	250
25.....	520	395	.....	.....	.....	1,220	522	458	551	352	1,760	263
26.....	380	580	.....	.....	.....	1,300	432	680	570	282	1,390	263
27.....	296	710	.....	.....	.....	1,220	1,140	680	458	475	1,000	352
28.....	335	820	.....	.....	.....	592	1,480	680	390	458	740	592
29.....	410	600	.....	.....	.....	625	1,140	494	390	592	570	658
30.....	580	600	.....	.....	.....	625	1,300	432	375	680	494	551
31.....	520	.....	.....	.....	.....	625	.....	475	.....	800	522	.....
Mean...	355	561	560	705	1,670	787	2,000	914	501	626	765	395

NOTE.—Discharge relation affected by ice, December 15 to March 14, inclusive. Mean discharge estimated as follows: December 15 to 31, 495; January 1 to 10, 602; January 11 to 20, 592; January 21 to 31, 893; February 1 to 10, 1,250; February 11 to 20, 1,880; February 21 to 28, 1,880; and March 1 to 14, 849 second-feet. A new rating table based largely on measurements made during 1916, is used beginning March 15. Data in the above table for March to September, inclusive, supersedes those published in the Report of the State Engineer for 1915, Volume II, page 182.

**Monthly discharge of St. REGIS RIVER AT BRASHER CENTER, for the year ending  
September 30, 1915**

[Drainage area, 621 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF Depth in inches on drainage area	Accu- racy
	Maximum	Minimum	Mean	Per square mile		
October.....	1,220	128	355	0.572	0.66	B
November.....	1,070	322	561	0.903	1.01	B
December.....	1,070	.....	590	0.902	1.04	B
January.....	.....	.....	705	1.14	1.31	D
February.....	.....	.....	1,670	2.69	2.80	D
March.....	.....	390	747	1.27	1.46	C
April.....	6,250	432	2,030	3.22	3.59	B
May.....	2,080	352	914	1.47	1.70	A
June.....	1,000	263	501	0.807	0.90	B
July.....	1,860	239	626	1.01	1.16	A
August.....	2,080	352	765	1.23	1.42	A
September.....	658	250	395	0.636	0.71	B
The year.....	6,250	128	813	1.31	17.76	.....

NOTE.— Above data from March to September, inclusive, supports those published for this period in the Report of the State Engineer and Surveyor, 1915, Vol. II, page 193.

**Daily discharge, in second-feet, of St. REGIS RIVER AT BRASHER CENTER, for the  
nine months ending June 30, 1916**

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	475	592	494	820	2,480	1,550	7,950	1,570	1,390
2.....	407	625	475	765	2,280	1,140	11,700	1,480	1,220
3.....	432	551	432	765	2,040	1,030	9,250	1,600	1,220
4.....	494	475	407	710	1,840	880	7,500	1,890	1,220
5.....	680	494	458	655	1,640	655	3,360	1,480	1,220
6.....	1,220	494	432	2,150	1,380	500	2,810	1,760	930
7.....	1,070	407	424	2,590	1,070	410	2,560	1,570	800
8.....	1,000	432	407	2,480	880	372	2,190	1,390	680
9.....	740	458	407	1,940	820	335	2,080	1,140	930
10.....	551	390	350	1,640	765	335	1,760	1,140	930
11.....	475	458	358	1,460	765	335	1,970	1,220	680
12.....	458	458	365	1,300	710	335	2,190	930	1,140
13.....	407	407	372	1,220	710	410	2,190	940	1,070
14.....	330	458	380	1,170	710	500	2,430	740	930
15.....	390	375	395	1,070	710	550	2,680	800	1,140
16.....	390	625	410	1,000	655	455	3,220	805	930
17.....	330	680	419	1,000	655	500	2,810	1,970	1,000
18.....	330	740	428	940	655	335	2,940	6,650	1,070
19.....	330	592	446	940	655	372	2,680	6,650	1,220
20.....	315	592	473	940	655	500	2,810	4,770	1,390
21.....	282	865	491	940	655	335	2,560	3,810	1,570
22.....	263	865	510	1,940	655	302	2,190	3,220	1,220
23.....	407	800	540	3,380	655	270	2,940	2,580	1,000
24.....	390	680	580	2,830	710	335	2,810	2,190	810
25.....	390	522	600	2,380	765	335	2,810	1,760	695
26.....	375	475	1,070	1,940	820	302	3,080	1,570	695
27.....	302	475	1,000	4,270	1,070	455	2,080	1,390	611
28.....	330	475	940	4,600	1,380	820	2,430	1,140	495
29.....	302	494	940	3,480	1,550	4,600	1,890	1,220	810
30.....	282	522	880	3,650	.....	6,450	1,570	1,390	875
31.....	475	.....	880	3,220	.....	13,800	.....	1,570	.....
Mean.....	472	549	541	1,880	1,050	1,270	3,380	2,010	996

NOTE.— Discharge relation affected by ice, December 10 to April 4, inclusive. Daily discharge given in this period is only approximate.

Monthly discharge of ST. REGIS RIVER AT BRASHER CENTER, for the nine months  
ending June 30, 1916

[Drainage area, 621 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF Depth in inches on drainage area	Accu- racy
	Maximum	Minimum	Mean	Per square mile		
October.....	1,220	263	472	0.760	0.88	B
November.....	865	375	549	0.894	0.99	B
December.....	1,070	350	511	0.871	1.00	C
January.....	4,600	655	1,880	3.03	3.49	C
February.....	2,480	655	1,050	1.69	1.82	C
March.....	13,800	270	1,270	2.05	2.36	C
April.....	11,700	1,570	3,380	5.45	6.08	B
May.....	6,650	740	2,010	3.24	3.74	B
June.....	1,570	495	996	1.60	1.78	B

Discharge measurements of ST. REGIS RIVER AT BRASHER CENTER, during the nine  
months ending June 30, 1916

DATE	Made by	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>
Dec. 30 a.....	A. H. Davison.....	d 5.03	832
Jan. 14 b.....	A. H. Davison.....	d 7.06	1,170
Jan. 26 b.....	A. H. Davison.....	d 5.65	1,960
Jan. 29 b.....	A. H. Davison.....	d 6.02	3,480
Feb. 12 b.....	A. H. Davison.....	d 6.79	722
Feb. 18 b.....	A. H. Davison.....	d 5.23	748
Feb. 19 b.....	A. H. Davison.....	d 5.79	624
Mar. 3 c.....	C. C. Covert.....	d 6.40	838
Mar. 15.....	A. H. Davison.....	d 5.71	610
Mar. 29.....	A. H. Davison.....	d 7.26	3,240
May 3.....	A. H. Davison.....	4.96	1,290
May 3.....	A. H. Davison.....	4.88	1,190
May 23.....	A. H. Davison.....	5.51	2,470
May 24.....	A. H. Davison.....	5.36	2,270
June 24.....	A. H. Davison.....	e 4.61	812

a Measurement made under complete ice cover 300 ft. above gage.

b Measurement made under complete ice cover 600 ft. above gage.

c Measurement made under partial ice cover at regular section.

d Discharge relation affected by ice.

e Staff gage reading was 6.60 ft.

## DEER RIVER, FRANKLIN COUNTY

### DESCRIPTION

Deer river is the principal tributary of the St. Regis. Rising in the central part of Franklin county at an elevation of about 1,500 feet above the sea, it flows in a general northwesterly direction, entering the St. Regis near Helena. The river has an average slope of about 10 feet per mile up to North Lawrence.

From North Lawrence to Tebo it has an average slope of 61 feet per mile. In this stretch the river drops 767 feet in  $12\frac{1}{2}$  miles. Probably 60 per cent of this fall would be attractive for power development, if some means were provided for regulating the flow of the stream. The country above Tebo is wild and there are no maps with requisite data to show storage possibilities in this region.

#### DEER RIVER AT BRASHER IRON WORKS

**Location.**—About 1,000 feet below steel highway bridge in the village of Brasher Iron Works, St. Lawrence county, (railroad station is Ironton) and 2 miles above the confluence of Deer river with St. Regis river in Helena. No important tributaries enter between the gage and the mouth of the river. A small creek enters from the left about 1 mile above the station.

**Records available.**—July 25, 1912, to June 30, 1916, when the station was discontinued.

**Drainage area.**—206 square miles. (Measured on post-route map.)

**Gage.**—Sloping staff gage, 32 feet long, graduated from 0.5 to 11.0 feet.

**Control.**—Gravel about 300 feet below the gage; probably permanent. The stream bed at the bridge is solid rock and smooth.

**Discharge measurements.**—During medium and high stages, made from the bridge; at low stages, made by wading a short distance above.

**Winter flow.**—Discharge relation seriously affected by ice during the winter months. Gage observations suspended during this period.

**Extremes of discharge.**—Current period: Maximum stage recorded, 6.8 feet at 5 P. M., April 1; discharge, 4,220 second-feet. Minimum stage recorded, 1.08 feet at 6 P. M., October 26; discharge, 44 second-feet.

1912–1916: Maximum stage recorded, 9.3 feet at 4 P. M., January 17, 1913; discharge, approximately 9,700 second-feet. Minimum stage recorded, 0.80 foot at 6 A. M., August 20, and 7 A. M., September 14, 1913; discharge, 17 second-feet.

**Accuracy.**—Rating curve fairly well defined.

**Coöperation.**— Established and maintained by the United States Geological Survey in coöperation with the State Conservation Commission.

Discharge measurements of DEER RIVER AT BRASHER IRON WORKS, during the nine months ending June 30, 1916

DATE	Made by	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>
May 1 <sup>a</sup> .....	A. H. Davison.....	2.18	273
May 1 <sup>b</sup> .....	A. H. Davison.....	2.17	262
May 25 <sup>b</sup> .....	A. H. Davison.....	2.68	435
June 17 <sup>b</sup> .....	A. H. Davison.....	2.34	309

<sup>a</sup> Measurement made by wading about 1,000 ft. above gage.

<sup>b</sup> Measurement made by wading about 30 ft. above gage.

Daily gage height, in feet, of DEER RIVER AT BRASHER IRON WORKS, for the nine months ending June 30, 1916. Alex. Barlow, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	1.30	1.5	1.38	.....	.....	.....	6.4	2.2	2.25
2.....	1.25	1.5	1.5	.....	.....	.....	5.0	2.2	2.0
3.....	1.5	1.42	1.42	.....	.....	.....	4.0	2.15	1.9
4.....	1.5	1.42	1.46	.....	.....	.....	3.3	2.5	1.85
5.....	1.75	1.38	1.35	.....	.....	.....	3.2	2.3	1.8
6.....	2.2	1.32	1.30	.....	.....	.....	3.2	2.2	1.8
7.....	1.9	1.29	1.21	.....	.....	.....	3.0	2.1	1.7
8.....	1.7	1.26	1.21	.....	.....	.....	2.8	2.0	1.75
9.....	1.6	1.38	1.28	.....	.....	.....	3.2	2.0	1.85
10.....	1.45	1.34	1.46	.....	.....	.....	2.9	1.9	1.9
11.....	1.38	1.30	1.45	.....	.....	.....	3.0	1.85	1.7
12.....	1.40	1.26	1.5	.....	.....	.....	3.2	1.8	1.8
13.....	1.30	1.30	1.40	.....	.....	.....	3.0	1.7	1.85
14.....	1.32	1.20	1.6	.....	.....	.....	3.0	1.65	1.75
15.....	1.40	1.24	1.5	.....	.....	.....	3.2	1.6	2.1
16.....	1.42	1.75	1.42	.....	.....	.....	4.1	1.6	2.05
17.....	1.36	1.7	1.55	.....	.....	.....	3.5	3.2	2.4
18.....	1.22	1.7	1.85	.....	.....	.....	3.2	5.0	2.2
19.....	1.25	1.75	2.05	.....	.....	.....	3.1	4.6	3.0
20.....	1.40	1.7	2.1	.....	.....	.....	2.8	3.9	3.4
21.....	1.40	1.9	2.2	.....	.....	.....	2.65	3.2	3.2
22.....	1.35	1.8	2.1	.....	.....	.....	2.6	2.8	2.75
23.....	1.29	1.7	2.2	.....	.....	.....	3.4	2.7	2.35
24.....	1.18	1.6	2.2	.....	.....	.....	3.4	2.6	2.1
25.....	1.10	1.55	1.8	.....	.....	.....	3.1	2.3	2.0
26.....	1.09	1.5	2.0	.....	.....	.....	2.9	2.1	1.85
27.....	1.18	1.5	3.4	.....	.....	.....	2.6	2.0	1.8
28.....	1.32	1.42	3.2	.....	.....	.....	2.55	1.9	1.75
29.....	1.31	1.48	2.9	.....	.....	.....	2.4	1.8	1.6
30.....	1.32	1.46	2.8	.....	.....	.....	2.3	2.05	1.6
31.....	1.35	.....	2.65	.....	.....	.....	.....	2.65	.....

**NOTE.**— Discharge relation affected by ice, December 9 to 24 and January 1 to March 31, both inclusive. Gage observation suspended during January, February and March.



Daily discharge, in second-feet, of DEER RIVER AT BRASHER IRON WORKS, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1	71	99	82	.....	.....	.....	3,760	274	290
2	64	99	99	.....	.....	.....	1,980	274	218
3	99	88	88	.....	.....	.....	1,120	260	192
4	99	88	93	.....	.....	.....	710	372	205
5	143	82	78	.....	.....	.....	660	305	168
6	251	74	71	.....	.....	.....	660	274	168
7	175	70	59	.....	.....	.....	570	245	146
8	133	66	59	.....	.....	.....	485	218	157
9	115	82	.....	.....	.....	.....	660	218	180
10	92	77	.....	.....	.....	.....	525	192	192
11	82	71	.....	.....	.....	.....	570	180	146
12	85	66	.....	.....	.....	.....	660	168	168
13	71	71	.....	.....	.....	.....	570	146	180
14	74	58	.....	.....	.....	.....	570	136	157
15	85	63	.....	.....	.....	.....	660	126	245
16	88	143	.....	.....	.....	.....	1,190	126	232
17	79	133	.....	.....	.....	.....	810	660	338
18	61	133	.....	.....	.....	.....	660	1,980	274
19	64	143	.....	.....	.....	.....	615	1,590	570
20	85	133	.....	.....	.....	.....	485	1,050	760
21	85	175	.....	.....	.....	.....	428	660	660
22	78	153	.....	.....	.....	.....	407	485	465
23	70	133	.....	.....	.....	.....	760	445	322
24	56	115	.....	.....	.....	.....	760	407	245
25	46	107	153	.....	.....	.....	615	305	218
26	45	99	199	.....	.....	.....	525	245	180
27	56	99	704	.....	.....	.....	407	218	168
28	74	88	610	.....	.....	.....	390	192	157
29	72	96	484	.....	.....	.....	338	168	126
30	74	93	446	.....	.....	.....	305	232	126
31	78	.....	392	.....	.....	.....	.....	426	.....
Mean	88.7	90.9	158	.....	.....	.....	762	406	255

NOTE.— Discharge relation affected by ice, December 9 to 24 and January 1 to March 31, both inclusive. Mean discharge, December 9 to 24, estimated, 80 second-feet. New rating used, beginning April 1.

Monthly discharge of DEER RIVER AT BRASHER IRON WORKS, for the nine months ending June 30, 1916

[Drainage area, 206 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF Depth in inches on drainage area	Accuracy
	Maximum	Minimum	Mean	Per square mile		
October	251	45	88.7	0.431	0.50	A
November	175	58	99.9	0.485	0.54	A
December	704	.....	158	0.718	0.83	D
January	.....	.....	.....	.....	.....	.....
February	.....	.....	.....	.....	.....	.....
March	.....	.....	.....	.....	.....	.....
April	3,760	305	762	3.70	4.13	B
May	1,980	126	406	1.97	2.27	B
June	760	126	255	1.24	1.38	A

## LAKE CHAMPLAIN DRAINAGE BASIN

## DESCRIPTION OF BASIN

Lake Champlain occupies a long and narrow valley, extending in a north-south direction and forming a part of the boundary between New York and Vermont.

Drainage areas tributary to LAKE CHAMPLAIN \*

LOCALITY	AREA IN SQUARE MILES		
	Place to place	Sub-total	Total
Pike river and adjacent area in Canada.....		a 242.00	.....
Missisquoi river in Canada.....		b 245.00	.....
Land area in Canada above outlet.....			487.00
Missisquoi river in Vermont.....		b 615.00	.....
(Total Missisquoi river, 860 square miles.)			
Lamoille river.....		b 725.00	.....
Winooski river.....		b 995.00	.....
Otter creek.....		b 935.00	.....
Eastern coast drainage.....		b 534.40	.....
Mettawee, Poultney and Castleton rivers in Vermont.....		c 376.00	.....
Land area in Vermont, except islands.....			4,180.40
Wood creek above Smith's Basin.....	18.60		.....
Big creek (Washington Co.) above junction with Wood creek.....	35.16	53.76	.....
Wood creek, Smith's Basin to Fort Ann.....	9.90	63.66	.....
Halfway creek above Kane's falls.....	78.82		.....
Halfway creek, Kane's falls to junction with Wood creek at Fort Ann.....	6.60	85.51	.....
Wood creek at Fort Ann, including Halfway creek.....		149.17	.....
Wood creek, Fort Ann to junction with Mettawee.....	55.73	204.90	.....
Mettawee river in Vermont.....	151.90		.....
Mettawee river in New York.....	55.70		.....
Total, Mettawee river.....		207.60	.....
Total, Wood creek and Mettawee river at junction.....		412.50	.....
Wood creek, junction Mettawee river to Whitehall.....	13.65	426.15	.....
Wood creek, Whitehall to junction with Poultney river.....	1.65	427.80	.....
Castleton river, in Vermont.....	100.90		.....
Poultney river, including Castleton river in Vermont.....		254.80	.....
Poultney river in New York.....		11.00	.....
Poultney river, total to junction with Wood creek.....		265.80	.....
Total, Wood creek and Poultney river at junction.....			693.60
Wood creek, Mettawee and Poultney rivers in New York.....			286.90
Lake George outlet.....		220.10	.....
Bouquet river.....		c 268.10	.....
Ausable river.....		d 521.30	.....
Little Ausable river.....		d 75.10	.....
Saranac river.....		d 629.60	.....
Little Chazy river.....		c 63.90	.....
Big Chazy river.....		d 299.40	.....
Western coast drainage.....		d 344.60	.....
Land area in New York, except islands.....			2,708.90
Islands in New York.....		e 55.20	.....
Total land area above outlet.....			7,431.50
Water surface in Canada.....		e 16.60	.....
Water-surface in United States.....		e 419.10	.....
Total water-surface.....		435.60	.....
Total drainage area above outlet.....			7,867.10
Richelieu river, Rouses Point to Chambly.....	a 310.00		.....
Total drainage area above Chambly.....			8,177.10
Richelieu river, Chambly to mouth.....	a 626.30		.....
Richelieu river, total.....		936.30	.....
Total drainage area above mouth.....			8,803.40

\* Table here presented is a revision of that appearing in the 1907 report. a From maps of Canadian Geological Survey. Scale: 1 inch = 4 miles. b United States post-route maps. Scale: 1 inch = 12.5 miles. c Topographic maps of U. S. G. S. Scale: 1 inch = 1 mile (nearly). d Bica's Atlas of New York. Scale: 1 inch = 2.5 miles. e Charts of U. S. Coast and Geodetic Survey. Scale: 1:40,000.

The drainage basin is irregular in form, being about seventy-five miles wide from a point opposite Middlebury, Vt., northward to the outlet of the lake at Rouses Point, on the international boundary. South of Middlebury the average width of the basin is about thirty-five miles and the lake itself is very narrow, forming virtually a drowned river.

The tributary region is rugged and mountainous, mostly covered with forest and with little depth of soil except in the stream valleys. The drainage is received almost entirely through large tributaries, there being little direct coast drainage into the lake. The outlet of the lake is Richelieu river, which flows northward from Rouses Point to St. Lawrence river. The land drainage area above Rouses Point is 7,431 square miles. The water-surface of the lake is 436 square miles, making the total area at the foot of the lake 7,867 square miles.

The fluctuation of the lake surface has an extreme range of nearly ten feet.

### LAKE CHAMPLAIN

Records showing the water-surface of Lake Champlain are kept at Fort Montgomery and Burlington by the United States Government and at Whitehall by the State of New York. The Government elevations are referred to mean sea-level at Sandy Hook, while the State elevations, Barge canal datum, are referred to mean tide at New York, which is taken as 14.73 feet below the Greenbush bench-mark. The relation between the two sets of elevations in this region is shown by the following determinations of the elevation of the old bench-mark at Whitehall, described as, "U. S. D. W. B. M., on coping of lock No. 23, between ends of anchor, N. W. gate, marked (cross in circle) U. S., with chisel," which is New York State Canal B. M. No. 130 and United States Coast and Geodetic Survey B. M. No. 36.

	Feet
Elevation (New York State Barge canal datum) . . . .	104.375
Elevation (United States Coast and Geodetic Survey datum) . . . . .	103.565
Difference . . . . .	0.81

Therefore, to convert elevations in this region given by the United States Coast and Geodetic Survey or by the United States Engineers (War Department), referred to mean sea-level, to elevations referred to Barge canal datum, add 0.81 foot. It is to be noted that the similar relation at Albany is 0.87 foot.

#### LAKE CHAMPLAIN AT WHITEHALL

A gage has been maintained by this Department in the mouth of Wood creek below the dam at Whitehall since January 22, 1905. This gage gives a record of the fluctuation in level of water in this arm of Lake Champlain which, however, is considerably affected by Wood creek discharges.

The original gage was attached to the face of the Champlain silk-mill on the right-hand side of the stream below the dam. A staff gage, attached to the face of the docking below new Barge canal lock on the left-hand side of the stream, is now read to tenths twice daily. This record was formerly published as "Wood creek below Dam at Whitehall."

Daily elevation of water-surface (B. C. Datum) of LAKE CHAMPLAIN AT WHITEHALL, for the nine months ending June 30, 1916. W. J. Berry, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	94.45	94.0	94.35	95.5	96.6	96.85	101.0	99.1	98.2
2.....	94.4	94.15	94.4	95.3	96.7	96.8	100.3	99.1	97.85
3.....	94.3	94.45	94.4	95.8	96.6	96.9	99.1	99.25	97.75
4.....	94.1	94.15	94.5	95.55	96.55	96.9	98.85	99.15	97.9
5.....	94.1	94.7	94.5	95.3	96.6	96.9	98.85	98.8	97.75
6.....	94.35	94.8	94.85	95.9	96.65	96.8	98.75	98.8	98.15
7.....	94.25	94.3	94.65	95.75	96.6	96.8	98.85	98.6	97.9
8.....	94.1	94.15	94.2	95.85	96.65	96.8	98.7	98.6	97.9
9.....	94.3	94.1	94.4	95.55	96.55	96.8	98.8	98.35	97.9
10.....	94.4	94.4	94.6	95.55	96.55	96.85	98.9	98.0	97.75
11.....	94.15	94.15	94.4	95.55	96.5	96.9	98.65	98.2	97.75
12.....	94.0	94.05	94.4	95.7	96.6	96.8	98.9	98.5	97.65
13.....	94.1	94.1	94.35	95.55	96.75	96.8	98.85	98.6	97.9
14.....	94.05	94.05	94.65	95.8	96.55	96.8	98.05	98.4	97.8
15.....	94.65	94.15	94.35	95.65	96.4	96.9	99.4	98.4	97.55
16.....	94.4	94.2	94.35	95.5	96.4	96.9	98.9	98.0	97.45
17.....	94.25	94.35	94.25	95.5	96.6	96.8	98.75	98.3	97.45
18.....	94.15	94.25	94.35	95.4	96.6	96.75	99.0	98.35	97.5
19.....	94.05	94.1	94.95	95.3	96.7	96.7	99.45	98.55	97.45
20.....	94.05	94.0	95.2	95.15	96.6	96.75	99.2	98.6	97.65
21.....	94.15	94.05	95.15	95.35	96.6	96.8	99.05	98.55	97.6
22.....	94.95	94.2	94.8	94.95	96.6	96.8	98.95	98.4	97.75
23.....	94.45	94.1	94.55	95.9	96.55	96.8	99.35	98.15	97.85
24.....	94.4	94.3	94.75	96.3	96.5	96.7	99.5	98.3	97.6
25.....	94.25	94.2	94.9	95.9	96.65	96.7	99.5	98.3	97.35
26.....	94.0	94.2	96.7	96.4	97.7	96.55	99.4	98.5	97.3
27.....	94.2	94.15	96.7	96.9	97.1	96.35	99.4	98.35	97.35
28.....	94.1	94.3	95.9	97.55	96.8	96.65	99.45	98.0	97.6
29.....	94.0	94.2	95.5	96.9	96.8	97.5	99.4	98.1	97.45
30.....	94.3	94.5	95.5	96.9	.....	98.8	99.05	98.3	97.7
31.....	94.3	.....	95.2	96.65	.....	100.9	.....	98.45	.....

## LAKE CHAMPLAIN AT BURLINGTON, VT.

**Location.**— On south side of roadway leading to dock of Champlain Transportation Co., at foot of King street, Burlington, Vt.

**Records available.**— May, 1907, to June 30, 1916.

**Gage.**— Staff; read once daily. Comparisons of gage readings indicate that zero of gage at Burlington is at practically the same elevation as that of gage at Fort Montgomery — 92.50 feet above mean sea-level (Elev. 93.31 B. C. datum).

**Extremes of stage.**— Current period: Maximum stage recorded, 5.75 feet on April 27. Minimum stage recorded, 0.65 foot, November 10 to 13, inclusive.

1907–1916: Maximum stage recorded, 8.20 feet on April 7, 1913. Minimum stage recorded, 0.25 foot on December 4, 1908.

**Coöperation.**— Gage heights furnished through the courtesy of Mr. D. A. Loomis, general manager of the Champlain Transportation Company to the United States Geological Survey.

Daily gage height, in feet, of LAKE CHAMPLAIN AT BURLINGTON, VERMONT, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	0.78	0.68	0.83	.....	3.08	.....	3.85	5.60	4.55
2.....	.75	.68	.83	.....	3.30	.....	.....	5.52	4.55
3.....	.....	.68	.87	1.62	.....	.....	.62	5.48	4.52
4.....	.73	.67	.90	1.68	.....	3.30	4.80	5.42	.....
5.....	.80	.67	.....	1.71	.....	.....	4.90	5.38	4.43
6.....	.90	.67	.94	.....	.....	.....	5.00	5.33	4.37
7.....	.90	.....	.94	.....	3.30	.....	5.03	.....	4.30
8.....	.88	.66	.96	.....	.....	.....	5.10	5.20	4.23
9.....	.88	.66	.97	.....	.....	.....	.....	5.09	4.20
10.....	.....	.65	.97	1.85	.....	.....	5.15	4.98	4.15
11.....	.85	.65	1.02	.....	.....	.....	5.15	4.93	.....
12.....	.85	.65	.....	.....	.....	.....	5.18	4.87	4.08
13.....	.82	.65	1.08	.....	.....	.....	5.19	4.80	4.08
14.....	.80	.....	1.11	.....	.....	3.18	5.22	.....	4.03
15.....	.78	.67	1.12	.....	.....	.....	5.32	4.60	3.96
16.....	.78	.67	1.15	.....	.....	.....	.....	4.50	3.94
17.....	.....	.67	1.15	2.00	.....	.....	5.33	4.55	3.91
18.....	.75	.68	1.18	.....	.....	3.05	5.40	4.70	.....
19.....	.75	.68	.....	.....	.....	.....	.....	4.88	3.87
20.....	.80	.69	1.20	.....	.....	2.93	5.44	4.90	3.85
21.....	.80	.....	1.20	.....	.....	.....	5.45	.....	3.85
22.....	.78	.71	1.22	.....	.....	.....	5.45	4.83	3.84
23.....	.77	.73	1.22	.....	.....	.....	.....	4.80	3.83
24.....	.....	.78	1.25	2.05	.....	.....	5.60	4.80	3.83
25.....	.73	.78	.....	2.10	.....	2.80	5.65	4.74	.....
26.....	.71	.78	.....	2.20	.....	.....	5.68	4.68	3.80
27.....	.71	.78	1.28	2.30	.....	2.60	5.75	4.62	3.79
28.....	.70	.....	1.30	2.45	.....	2.65	5.72	.....	3.77
29.....	.60	.81	1.30	2.60	.....	.....	5.68	4.42	3.76
30.....	.69	.81	1.45	.....	.....	3.05	.....	4.40	3.75
31.....	.....	.....	1.60	2.95	.....	3.48	.....	4.48	.....

**RICHELIEU RIVER AT FORT MONTGOMERY, ROUSES POINT**

**Location.**—Inside Fort Montgomery, about half a mile below head of Richelieu river, the outlet of Lake Champlain.

**Records available.**—1875 to 1916.

**Drainage area.**—7,867 square miles, including 436 square miles of water-surface.

**Gage.**—Staff, read once daily—in the morning—to half-tenths. Elevation of gage zero at Fort Montgomery, 92.50 feet above mean sea-level (Elev. 93.31 B. C. datum).

**Extremes of stage.**—Current period: Maximum stage recorded, 5.5 feet at 10 A. M., April 26 and 27. Minimum stage recorded, 0.2 foot at 10 A. M., November 5.

1869–1916: Maximum stage recorded, 10.78\* feet. Minimum stage recorded, –0.6 foot, November 13, 1908.

**Coöperation.**—Gage observed under direction of Corps of Engineers, U. S. A, and reported weekly to U. S. Geological Survey.

\* See page 240, Water-Supply Paper 97.

Daily gage height, in feet, of RICHELIEU RIVER AT FORT MONTGOMERY, ROUSES POINT, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1	0.50	0.60	0.70	1.45	2.70	2.85	3.40	5.35	4.20
2	0.50	0.40	0.70	1.50	2.80	2.90	3.70	5.30	4.30
3	0.45	0.30	0.65	1.50	2.90	2.90	3.95	5.25	4.20
4	0.60	0.35	0.65	1.50	2.95	2.90	4.25	5.20	4.05
5	0.40	0.20	0.60	1.60	3.00	2.90	4.50	5.15	4.00
6	0.40	0.30	0.60	1.50	3.00	2.90	4.60	5.10	3.50
7	0.55	0.30	0.65	1.55	3.05	2.95	4.70	5.05	3.75
8	0.60	0.40	0.80	1.60	3.00	2.90	4.80	5.00	4.00
9	0.50	0.35	0.70	1.65	3.05	2.85	4.80	4.85	4.00
10	0.50	0.40	0.55	1.65	3.05	2.85	4.90	4.95	4.00
11	0.60	0.40	0.65	1.65	3.00	2.85	5.00	4.75	3.75
12	0.65	0.60	0.65	1.65	2.95	2.80	4.95	4.65	3.40
13	0.65	0.50	0.70	1.60	2.95	2.80	4.95	4.45	3.30
14	0.70	0.45	0.65	1.60	2.90	2.80	4.95	4.45	3.30
15	0.40	0.35	0.65	1.75	2.90	2.75	5.00	4.35	3.30
16	0.50	0.40	0.65	1.75	2.90	2.75	5.10	4.40	3.30
17	0.60	0.30	0.70	1.70	2.85	2.75	5.15	4.30	3.50
18	0.70	0.45	0.70	1.70	2.85	2.70	5.10	4.50	3.50
19	0.70	0.50	0.75	1.65	2.85	2.70	5.15	4.50	3.80
20	0.55	0.75	0.75	1.75	2.80	2.65	5.25	4.60	3.90
21	0.60	0.55	0.75	1.65	2.70	2.60	5.25	4.65	3.90
22	0.50	0.55	0.85	1.75	2.70	2.60	5.25	4.65	3.85
23	0.30	0.55	0.95	1.75	2.65	2.55	5.20	4.95	3.60
24	0.40	0.55	0.85	1.80	2.60	2.50	5.35	4.65	3.60
25	0.50	0.65	0.90	1.95	2.60	2.50	5.45	4.50	3.90
26	0.60	0.65	0.95	1.95	2.90	2.50	5.50	4.40	3.70
27	0.45	0.75	1.20	2.05	2.85	2.65	5.50	4.40	3.65
28	0.50	0.60	1.25	2.20	2.85	2.65	5.45	4.60	3.60
29	0.60	0.60	1.25	2.35	2.85	2.90	5.45	4.25	3.50
30	0.30	0.70	1.35	2.50	.....	3.15	5.35	4.20	3.55
31	0.30	.....	1.45	2.65	.....	3.30	.....	4.10	.....

## LAKE GEORGE

For the purpose of determining the rate of change and the range in elevation of the water-surface of the lake, gages were established on Lake George in July, 1913, at three points — Lake George, Sagamore (Bolton Landing) and Rogers Rock — by the United States Geological Survey in coöperation with the New York State Conservation Commission.

The gages were not set to any particular datum, but each was referred to a substantial bench-mark by the use of an engineer's level. The gages are read once each day to the nearest half-tenths and the force and direction of the wind are recorded.

A comparative study of these gage heights and those obtained at the mill of the International Paper Company indicates that the zeros of all three gages are below the crest of the dam as follows:

Lake George .....	4.75 feet below crest
Sagamore .....	4.9 feet below crest
Rogers Rock .....	3.4 feet below crest

All three gages were read until June 30, 1914. Comparison of the records up to this date showed that one gage would indicate the mean elevation of the lake and the observations at Lake George and Sagamore were discontinued July 1, 1914.

## LAKE GEORGE AT ROGERS ROCK

**Location.**— At a boat-house in a small bay on the north side of the steamboat landing at Rogers Rock, Essex county.

**Drainage area.**— Not measured.

**Records available.**— July 10, 1913, to July 30, 1916.

**Gage.**— Vertical staff fastened to a pile in the back end of the boat-house. Read once daily. Datum 3.4 feet below crest of dam at outlet of lake.

**Extremes of stage.**— Current period: Maximum stage recorded, 3.8 feet at 9:50 A. M., May 30. Minimum stage recorded, 1.4 feet on December 11 and 12.

1913-1916: Maximum stage, 4.98 feet on May 2, 1914. Minimum stage recorded, 1.38 feet on December 8, 1914.

**Regulation.**— The elevation of lake surface is regulated by the operation of gates and wheels at the dam at the outlet of the lake at Ticonderoga.

Coöperation.— Station established and maintained by the United States Geological Survey in coöperation with the State Conservation Commission.

Daily gage height, in feet, and wind data of LAKE GEORGE AT ROGERS ROCK, for the nine months ending June 30, 1916

1915	OCTOBER			NOVEMBER			DECEMBER		
	Gage height in feet	WIND		Gage height in feet	WIND		Gage height in feet	WIND	
		Di- rec- tion	Force		Di- rec- tion	Force		Di- rec- tion	Force
1.....	2.28	N	L	1.92	S	M	1.55	SW	M
2.....	2.26	N	L	2.0	SW	H	1.52	Calm	
3.....	2.25	N	L	1.88	S	M	1.5	N	L
4.....	2.28	S	M	1.85	S	H	1.5	N	L
5.....	2.2	W	L	1.78	N	M	1.48	N	M
6.....	2.2	N	M	1.7	N	H	1.45	N	M
7.....	2.25	S	M	1.7	NE	H	1.45	N	L
8.....	2.2	S	M	1.78	S	L	1.48	S	M
9.....	2.2	SW	M	1.8	SW	M	1.5	SW	H
10.....	2.15	N	M	1.8	W	M	1.42	N	M
11.....	2.22	S	H	1.68	SE	M	1.4	N	M
12.....	2.2	S	M	1.68	S	M	1.4	Calm	
13.....	2.18	S	M	1.7	S	H	1.42	Calm	
14.....	2.15	S	M	1.65	S	M	1.45	SW	H
15.....	2.0	N	H	1.75	S	H	1.48	SW	H
16.....	2.15	Calm		1.7	W	H	1.48	S	M
17.....	2.18	S	M	1.68	N	L	1.45	S	L
18.....	2.1	S	M	1.58	Calm		1.48	S	L
19.....	2.1	S	M	1.65	SE	H	1.52	W	M
20.....	2.08	S	L	1.75	S	H	1.5	SW	M
21.....	2.02	S	H	1.7	S	L	1.45	N	M
22.....	2.1	SW	M	1.6	N	L	1.5	S	H
23.....	2.0	N	H	1.62	S	M	1.5	S	M
24.....	2.0	N	M	1.6	Calm		1.52	S	M
25.....	2.02	Calm		1.58	S	M	1.55	S	L
26.....	2.05	S	H	1.55	S	M	1.5	N	H
27.....	2.0	S	M	1.58	S	M	1.78	S	M
28.....	2.0	S	L	1.55	Calm		1.75	S	M
29.....	1.98	S	M	1.6	S	M	1.72	N	M
30.....	1.95	N	M	1.65	S	M	1.75	N	M
31.....	1.92	N	L	.....	.....	.....	1.82	Calm	

L=Light. H=Heavy. M=Moderate.



Daily gage height, in feet, and wind data of LAKE GEORGE AT ROGERS ROCK, for the nine months ending June 30, 1916—Continued

DAY	JANUARY			FEBRUARY			MARCH			APRIL			MAY			JUNE		
	Gage height in feet	WIND		Gage height in feet	WIND		Gage height in feet	WIND		Gage height in feet	WIND		Gage height in feet	WIND		Gage height in feet	WIND	
		Di- rec- tion	Force		Di- rec- tion	Force		Di- rec- tion	Force		Di- rec- tion	Force		Di- rec- tion	Force		Di- rec- tion	Force
1	1.78	N	H	2.12	S	M	2.45	NW	M	2.75	S	H	3.5	S	L	3.68	N	L
2	1.88	SW	M	2.1	M	M	2.42	N	M	2.9	N	M	3.55	N	M	3.72	S	M
3	1.85	S	M	2.15	L	M	2.45	N	M	2.95	N	M	3.48	N	M	3.75	S	M
4	1.9	S	M	2.2	H	M	2.42	W	M	3.0	N	M	3.45	N	M	3.78	S	M
5	1.95	S	M	2.18	S	M	2.45	W	M	3.05	N	M	3.42	N	M			
6	1.9	SW	H	2.2	L	M	2.48	SW	M	3.08	SW	M	3.42	Calm	M	3.68	N	H
7	1.88	N	M	2.28	SW	H	2.48	SW	M	3.1	V	M	3.45	S	M	3.7	Calm	
8	1.85	N	M	2.2	Calm	M	2.5	SW	M	3.1	N	M	3.48	N	M	3.65	S	L
9	1.9	Calm	M	2.22	SW	M	2.58	SW	M	3.12	N	H	3.4	NW	H	3.62	S	L
10	1.92	S	H	2.2	SW	M	2.55	SW	M	3.18	SW	L	3.45	SW	H	3.65	S	L
11	1.95	S	H	2.15	L	M	2.5	SW	L	3.2	H	H	3.52	SW	H	3.7	S	M
12	1.92	Calm	H	2.12	N	M	2.5	S	M	3.2	L	M	3.4	W	M	3.68	N	M
13	1.9	S	H	2.1	N	M	2.5	N	M	3.22	M	M	3.35	W	M	3.68	S	M
14	1.85	N	H	2.18	N	M	2.52	W	M	3.2	M	M	3.38	S	M	3.65	S	M
15	1.9	Calm	M	2.2	N	M	2.45	W	M	3.25	N	M	3.35	S	M	3.7	S	H
16	1.92	S	M	2.2	SW	M	2.5	NW	M	3.3	N	M	3.4	Calm	M	3.62	Calm	
17	1.95	SW	H	2.25	SW	M	2.48	NW	M	3.32	N	M	3.5	SW	M	3.65	S	H
18	1.9	SW	H	2.15	SW	M	2.48	NW	M	3.42	N	M	3.7	SW	M	3.65	S	H
19	1.9	S	H	2.18	SW	M	2.45	NW	M	3.4	N	M	3.65	NW	M	3.62	SW	H
20	1.88	S	H	2.2	N	M	2.42	NW	M	3.3	Calm	M	3.65	NW	M	3.68	SW	H
21	1.85	SW	M	2.18	N	M	2.42	W	M	3.32	N	M	3.62	N	M	3.65	S	L
22	1.88	SW	M	2.15	N	M	2.4	N	M	3.35	N	M	3.62	N	M	3.6	NW	L
23	1.9	SW	M	2.12	N	M	2.42	N	M	3.4	N	M	3.72	N	M	3.58	N	L
24	1.85	S	M	2.15	SW	M	2.42	NW	M	3.48	N	M	3.75	N	M	3.6	N	M
25	1.8	S	L	2.2	SW	M	2.38	N	M	3.5	Calm	M	3.7	N	M	3.55	S	M
26	1.82	S	L	2.4	SW	H	2.4	N	M	3.5	L	L	3.68	N	M	3.58	S	H
27	1.85	SW	H	2.45	SW	M	2.4	N	M	3.48	S	M	3.7	N	M	3.58	S	H
28	1.85	SW	H	2.5	SW	M	2.4	N	M	3.5	Calm	M	3.72	N	M	3.58	S	M
29	2.08	N	M	2.42	NW	M	2.42	N	M	3.48	W	L	3.75	N	M	3.58	S	M
30	2.12	S	L	2.45	NW	M	2.42	N	M	3.48	Calm	M	3.75	N	M	3.58	S	M
31	2.15	S	L	2.62	N	M	2.62	S	M	3.48	Calm	M	3.7	N	M	3.52	S	N

L = Light. H = Heavy. M = Moderate. V = Shifting.

## AUSABLE RIVER

## DESCRIPTION

Ausable river is formed by the junction of the east and west branches, which have their headwaters in the northwestern part of Essex county. The east branch flows from upper Ausable lake, at an elevation of 1,990 feet above sea-level. The west branch, formed by several small streams that lie in the valley to the west and north of the east branch, receives the outflow from Lake Placid at elevation 1,864 feet. Both branches flow north and east to their junction at the village of Ausable Forks, about 20 miles from the mouth of the stream along the river, from which point the river flows northeast, entering Lake Champlain about 10 miles south of Plattsburg and opposite and slightly north of the city of Burlington, Vt. In this twenty miles a total descent of 460 feet occurs, a portion of which is in the famous Ausable chasm.

The drainage basin of Ausable river occupies a plateau at a general elevation of 800 to 1,200 feet, the mountainous boundaries of the watershed rising to altitudes of 3,000 to 5,000 feet. Throughout the entire course, the river is fed by small mountain streams that enter at nearly right angles from the mountains on either side. There are few lakes in this drainage area to act as regulators of the flow and, owing to the great differences of elevation throughout the area, the stream has what is called a flashy discharge, its fluctuations being large and rapid.

Owing to the fact that this basin lies on the eastern slope of the Adirondack mountains, the average rainfall is less than for those basins whose streams rise on the western and southern slopes, the mean yearly precipitation being about 32 inches.

Drainage areas of AUSABLE RIVER \*

LOCATION	AREA	
	Place to place	Total
	<i>Square miles</i>	<i>Square miles</i>
Lake Placid, water surface.....		3.80
Lake Placid, drainage area.....	21.80	21.80
West branch from foot of Lake Placid to junction with east branch..	211.20	233.00
East branch above forks.....	196.90	429.90
Above gaging station.....	40.10	470.00
Gaging station to Keeseville.....	6.10	476.10
Keeseville to Birmingham.....	27.40	503.50
Birmingham to mouth.....	17.80	521.30

\* From Willboro, Ausable, Lake Placid, Mount Marcy, and Elizabethtown sheets of the United States Geological Survey topographic maps.

**AUSABLE RIVER AT AUSABLE FORKS**

**Location.**— In the village of Ausable Forks, Clinton county, immediately below the junction of the east and west branches and about 15 miles above the mouth of the river.

**Records available.**— August 17, 1910, to June 30, 1916.

**Drainage area.**— 444 square miles. (Measured on U. S. Geological Survey topographic maps.)

**Gage.**— Chain, on the left bank, about 1,000 feet below the junction of east and west branches of Ausable river; read twice daily; datum unchanged.

**Control.**— Sand and gravel; likely to shift. Channel divided by an island.

**Discharge Measurements.**— Made from a cable about  $1\frac{1}{2}$  miles below the gage. At this place the river flows in one channel.

**Winter flow.**— Discharge relation slightly affected by ice. Flow determined from frequent discharge measurements and climatology records.

**Extremes of discharge.**— Current period: Maximum stage recorded, 7.35 feet at 6:00 P. M., May 17; discharge, 8,910 second-feet. Minimum stage recorded, 3.54 feet at 8 A. M., November 14; discharge, 135 second-feet.

1910–1916: Maximum stage recorded, 10.2 feet in the evening of March 27, 1913; discharge, approximately 25,000 second-feet. Minimum stage recorded, 3.0 feet at 7 A. M., July 21, 1912; discharge, practically zero.

**Accuracy.**— Conditions at the measuring section, favorable. Discharge rating curve is well defined and estimates are good.

**Special study.**— A portable automatic gage was installed at this station and a continuous record of gage height obtained from July 11 to September 30, 1914, inclusive. This record showed a continual fluctuation in stage having a small range. It was found that monthly mean discharge values based on semi-daily gage heights were in error, as follows: July 11 to 31, 1914, 3.5 per cent; August, 1914, 4.1 per cent; September, 1914, 0.5 per cent. Some of the daily discharges showed larger errors, but these errors were compensating.

**Coöperation.**— Gage heights observed under direction of United States Geological Survey in coöperation with the State Conservation Commission.

Discharge measurements of AUSABLE RIVER AT AUSABLE FORKS, during the nine months ending June 30, 1916

DATE	Made by	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 11 a.....	E. D. Burchard.....	3.75	273
Dec. 4.....	A. H. Davison.....	3.83	328
Dec. 4.....	A. H. Davison.....	3.77	286
Jan. 1 b.....	A. H. Davison.....	c 3.85	317
Jan. 1 c.....	A. H. Davison.....	c 3.88	334
Jan. 1 c.....	A. H. Davison.....	c 3.91	347
Jan. 16 d.....	A. H. Davison.....	c 3.82	306
Mar. 14 c.....	A. H. Davison.....	e 4.00	405
April 28.....	A. H. Davison.....	4.92	2,050
April 28.....	A. H. Davison.....	4.87	2,020
April 28.....	A. H. Davison.....	4.85	1,940
May 26.....	O. W. Hartwell.....	4.35	1,020
May 26.....	O. W. Hartwell.....	4.35	1,040

a Measurement made by wading 1 mile below gage.

b Measurement made under complete ice cover 600 feet above gage.

c Measurement made under complete ice cover at cable section.

d Measurement made under partial ice cover at cable section.

e Discharge relation affected by ice.

Daily gage height, in feet, of AUSABLE RIVER AT AUSABLE FORKS, for the nine months ending June 30, 1916. A. S. Baker, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	3.61	3.71	4.00	3.90	5.6	4.28	5.25	5.1	4.38
2.....	3.62	3.64	3.91	3.87	4.7	4.29	5.7	5.35	4.20
3.....	3.62	3.71	3.83	3.88	4.40	4.40	4.85	4.95	4.30
4.....	3.74	3.71	3.76	3.87	4.28	4.22	4.5	5.6	5.55
5.....	3.73	3.71	3.71	3.84	4.21	4.06	4.40	5.05	4.40
6.....	4.38	3.69	3.76	4.35	4.45	4.06	4.31	4.85	4.42
7.....	4.07	3.63	3.72	4.37	4.5	3.97	4.30	4.8	4.12
8.....	3.98	3.70	3.69	4.39	4.09	3.89	4.22	4.75	4.15
9.....	3.84	3.63	3.68	4.32	4.15	3.92	4.20	4.7	4.32
10.....	3.80	3.71	3.60	4.33	4.10	3.92	4.10	4.55	4.09
11.....	3.87	4.71	3.62	3.92	4.23	4.05	4.20	4.55	4.75
12.....	3.72	3.65	3.64	4.08	3.91	3.92	4.48	4.48	4.48
13.....	3.61	3.69	3.64	3.89	3.79	3.84	4.47	4.45	4.30
14.....	3.73	3.57	3.66	4.26	3.70	3.80	4.46	4.17	4.26
15.....	3.76	3.67	3.66	3.88	3.84	3.86	4.44	4.25	4.18
16.....	3.74	3.83	3.62	3.83	4.16	3.84	4.5	4.55	4.13
17.....	3.70	3.71	3.68	4.12	4.30	4.05	4.9	6.3	4.6
18.....	3.73	3.66	3.74	4.10	4.16	4.06	5.0	6.1	4.7
19.....	3.67	3.70	3.80	3.92	4.26	3.76	4.6	5.3	4.5
20.....	3.87	4.16	3.85	3.82	4.15	3.76	4.55	4.7	4.42
21.....	3.87	4.04	3.8	3.78	4.20	3.76	4.46	4.43	4.28
22.....	3.79	4.00	3.85	4.28	4.14	3.75	4.55	4.48	4.09
23.....	3.74	3.91	3.78	5.15	3.98	3.70	5.8	4.7	4.30
24.....	3.69	3.81	3.68	4.55	3.90	4.00	6.0	4.6	3.98
25.....	3.70	3.71	3.74	4.39	3.90	3.76	5.5	4.5	3.94
26.....	3.71	3.79	4.20	4.38	6.5	3.82	5.4	4.34	3.92
27.....	3.75	3.77	4.28	4.9	4.95	4.5	5.15	4.22	3.88
28.....	3.69	4.12	4.06	6.7	4.33	4.9	4.9	4.16	5.1
29.....	3.69	4.25	4.00	5.2	4.28	4.8	5.05	4.14	4.42
30.....	3.70	4.35	3.98	4.75	.....	5.05	5.0	4.30	4.10
31.....	3.75	.....	4.02	4.7	.....	5.0	.....	4.7	.....

NOTE.— Discharge relation affected by ice, December 30 to January 19 and February 3 to March 28, both inclusive.

Daily discharge, in second-feet, of AUSABLE RIVER AT AUSABLE FORKS, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	172	238	504	356	3,440	851	2,840	2,490	1,070
2.....	179	192	412	374	1,490	825	3,950	3,070	825
3.....	179	238	338	384	940	702	1,940	2,160	955
4.....	262	238	278	374	716	536	1,260	3,690	1,350
5.....	254	238	238	347	597	446	1,100	2,380	1,100
6.....	982	224	278	338	504	407	970	1,940	1,130
7.....	585	185	246	328	453	371	955	1,830	727
8.....	484	230	224	319	422	311	851	1,730	764
9.....	347	185	217	347	402	336	825	1,620	984
10.....	310	238	166	374	374	336	702	1,350	691
11.....	374	238	179	374	347	455	825	1,350	1,730
12.....	246	198	192	384	270	336	1,230	1,230	1,230
13.....	172	224	192	393	192	272	1,210	1,180	955
14.....	254	151	204	818	166	242	1,200	788	903
15.....	278	211	204	384	166	287	1,160	890	800
16.....	262	338	179	294	328	272	1,260	1,350	739
17.....	230	238	204	286	504	250	2,050	5,600	1,440
18.....	254	204	262	286	597	227	2,270	5,030	1,620
19.....	211	230	310	278	433	214	1,440	2,950	1,260
20.....	374	692	356	328	402	214	1,350	1,620	1,130
21.....	374	550	310	294	365	214	1,200	1,150	929
22.....	302	504	356	844	328	208	1,350	1,230	691
23.....	262	412	294	2,380	810	177	4,210	1,620	955
24.....	224	319	217	1,240	302	196	4,750	1,440	567
25.....	230	238	262	996	310	214	3,440	1,260	526
26.....	238	302	740	982	6,190	302	3,190	1,010	505
27.....	270	286	844	1,860	2,160	484	2,600	851	465
28.....	224	644	574	6,490	998	955	2,050	776	2,490
29.....	224	805	504	2,490	929	1,830	2,380	751	1,130
30.....	230	940	433	1,580	.....	2,380	2,270	955	702
31.....	270	.....	402	1,490	.....	2,270	.....	1,620	.....
Mean....	299	331	326	904	849	552	1,890	1,830	1,010

NOTE.— Discharge relation affected by ice, December 30 to January 19 and February 3 to March 28, both inclusive. Daily discharge given in these periods is approximate. New rating used, beginning February 25.

Monthly discharge of AUSABLE RIVER AT AUSABLE FORKS, for the nine months ending June 30, 1916

[Drainage area, 444 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF	Accu- racy
	Maximum	Minimum	Mean	Per square mile	Depth in inches on drainage area	
October.....	982	172	299	0.673	0.78	A
November.....	940	151	331	0.745	0.83	A
December.....	844	166	326	0.734	0.85	B
January.....	6,490	278	904	2.04	2.35	C
February.....	6,190	166	849	1.91	2.06	C
March.....	2,380	177	552	1.24	1.43	C
April.....	4,750	702	1,890	4.26	4.75	B
May.....	5,600	751	1,830	4.12	4.75	B
June.....	2,490	465	1,010	2.28	2.54	A

## WEST BRANCH OF AUSABLE RIVER NEAR NEWMAN

**Location.**— On the farm of James Dudley, about 4 miles north-east of Newman, Essex county, and about 4 miles below its confluence with the outlet of Lake Placid.

**Records available.**— June 7 to 30, 1916, inclusive.

**Drainage area.**— Not measured.

**Gage.**— Staff gage in two sections on the right bank, near the residence of Mr. Dudley. The lower section of the gage is sloping and graduated from 1.0 foot to 6.5 feet; the upper section is vertical, graduated from 6.55 feet to 10.1 feet.

**Control.**— Solid rock.

**Discharge measurements.**— Made by wading at low stages and from cable about 300 feet above the gage at medium and high stages.

**Winter flow.**— Effects of ice not known.

**Coöperation.**— Established and maintained by the United States Geological Survey in coöperation with the State Conservation Commission.

Discharge measurements of WEST BRANCH OF AUSABLE RIVER NEAR NEWMAN, during the nine months ending June 30, 1916

DATE	Made by	Gage height	Discharge
June 7 <i>a</i> .....	A. H. Davison.....	<i>Feet</i> 3.33	<i>Sec.-ft.</i> 217
Aug. 3 <i>a</i> .....	A. H. Davison.....	2.64	61.0

*a* Measurement made by wading opposite gage.

Daily gage height, in feet, of WEST BRANCH OF AUSABLE RIVER NEAR NEWMAN, for the nine months ending June 30, 1916

DAY	June	DAY	June	DAY	June	DAY	June	DAY	June
7.....	3.33	12.....	3.48	17.....	3.8	22.....	3.32	27.....	3.0
8.....	3.22	13.....	3.42	18.....	3.78	23.....	3.18	28.....	3.58
9.....	3.2	14.....	3.38	19.....	3.55	24.....	3.1	29.....	3.22
10.....	3.22	15.....	3.32	20.....	3.52	25.....	3.05	30.....	3.32
11.....	3.15	16.....	3.3	21.....	3.42	26.....	3.1	31.....	.....

## SARANAC RIVER

## DESCRIPTION

Saranac river rises in southeastern Franklin county and flows northeastward to a point near Cadyville and thence eastward into Lake Champlain at Plattsburg. The southern boundary of the basin is the Ampersand mountain range and the stream drains the north slope of the most elevated region of the state of New York. About 16.2 per cent of the upper drainage area is water-surface. The areas tributary to the river are shown in the following table:

Drainage areas of SARANAC RIVER \*

LOCATION	Area	Total area
	<i>Square miles</i>	<i>Square miles</i>
Above Saranac lake State dam .....		157.50
Above Saranac lake village .....	44.90	202.40
Above Franklin Falls .....	104.30	306.70
North branch, Saranac river .....	136.60	136.60
At junction, North branch .....		498.80
Above High Falls .....	19.60	518.40
Above Cadyville .....	74.60	593.00
Above Kent Falls .....	2.90	595.90
Above Morrisville .....	2.00	597.90
Above Lozier dam .....	26.10	624.00
Above mouth .....	5.60	629.60

\* From Bien's Atlas of New York. a The U. S. Geological Survey gives the total area above the Lozier dam, measured on the U. S. G. S. topographic maps, as 607 square miles.

The results of gagings of Saranac river at a station formerly maintained at Saranac lake are given in the Report of the State Engineer and Surveyor for 1903, supplement, pages 71-4.

In 1854 a timber dam was built below lower Saranac lake for the purpose of flooding logs. In 1899-1901 a masonry dam and lock were erected by the State at this point.

**SARANAC RIVER NEAR PLATTSBURG**

**Location.**— At the Indian rapids power-plant (formerly known as Lozier dam) of the Plattsburg Gas & Electric Co., about 6 miles above the mouth of the river at Plattsburg, Clinton county.

**Records available.**— March 27, 1903, to June 30, 1916.

**Drainage area.**— 607 square miles. (Measured on U. S. Geological Survey topographic maps.)

**Gages.**— The crest gage is a vertical staff in the angle of the wing-wall at the end of the intake racks. Datum changed, 0.76 foot (higher), August 20, 1906. The tail-race gage is a vertical staff spiked to timber crib dike between tail-race and river about 50 feet below power-house. Datum has changed slightly by settling of crib work. An inclined staff gage at the cable station has been used to determine a discharge rating at that point. Records of kilowatt output are obtained from readings of watt meter on switchboard at half-hour intervals.

**Discharge measurements.**— Made from cable at head of Indian rapids  $\frac{1}{4}$  mile below the dam; low-water measurements made by wading under cable or in tail-race.

**Discharge ratings.**— The records include the flow over a concrete spillway 171.25 feet in crest length, a rating for which has been prepared by the use of coefficients derived from experiments made in the hydraulic laboratory of Cornell University on a model section of the dam;\* the discharge through two power units equipped with 300 kilowatt generators, the ratings for which have been determined by current-meter measurements; and the discharge through two 5-foot waste-gates when open.

**Regulation.**— The lakes and ponds on the main stream and tributaries above the station comprise a water-surface area of about 25.5 square miles. The natural storage afforded by these reservoirs has been largely increased by the State dam at Lower Saranac lake, the operation of which affects the distribution of flow throughout the year.

**Extremes of Discharge.**— Current period: Maximum daily discharge, 4,100 second-feet, April 2. Minimum daily discharge, 235 second-feet, October 13.

1903–1916: Maximum daily discharge, 6,410 second-feet, April 20, 1914. Minimum daily discharge, 15 second-feet, August 4, 1908.

\*See Water-Supply Paper 200, pages 98–100.



**Accuracy.**—At low stages there is considerable fluctuation in discharge from the operation of automatic governors on the wheel gates. Errors due to this cause are largely compensated by the use of 48 observations a day. A comparison made in July, 1914, of the discharge at the cable station, as determined by a portable recording gage, and the discharge as computed by the power-plant ratings showed a very close agreement for the daily means.

**Coöperation.**—Records of gage heights and watt-meter readings are furnished by the Plattsburg Gas & Electric Co., Herbert A. Stutchbury, superintendent. Station maintained by the United States Geological Survey in coöperation with the State Conservation Commission.

Daily discharge, in second-feet, of SARANAC RIVER NEAR PLATTSBURG, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb	Mar.	April	May	June
1.....	390	560	410	430	2,150	920	3,000	1,600	1,220
2.....	490	580	350	440	1,850	900	4,100	1,350	1,160
3.....	310	410	400	540	1,550	780	3,300	1,400	1,000
4.....	420	410	400	400	1,140	740	2,600	1,800	1,080
5.....	400	420	260	460	1,350	640	2,150	1,650	1,100
6.....	410	430	450	520	1,240	600	2,200	1,600	1,450
7.....	440	300	300	700	1,220	680	1,800	1,500	1,040
8.....	360	420	340	660	980	760	1,600	1,400	780
9.....	410	370	370	520	920	700	1,450	1,400	880
10.....	290	460	360	740	880	740	1,450	1,300	860
11.....	470	370	270	700	700	760	1,450	1,350	880
12.....	350	300	260	700	700	640	1,600	1,300	1,040
13.....	235	360	390	760	540	780	1,650	1,120	940
14.....	320	280	310	760	580	640	1,750	960	940
15.....	380	500	300	660	460	600	1,650	1,020	1,000
16.....	420	560	320	600	560	540	1,800	980	1,120
17.....	245	450	330	700	600	520	2,150	1,550	1,550
18.....	490	450	470	600	720	520	2,200	3,000	1,600
19.....	380	500	380	560	600	500	2,100	2,700	1,700
20.....	390	540	490	560	520	620	2,000	2,700	1,400
21.....	380	470	260	620	500	540	1,900	2,350	1,240
22.....	390	600	320	640	620	540	1,650	2,000	960
23.....	420	400	290	960	720	500	1,600	2,000	840
24.....	460	410	320	1,080	640	560	2,800	1,900	780
25.....	340	420	270	1,220	640	520	2,500	1,650	640
26.....	250	400	410	1,250	1,300	440	2,250	1,600	680
27.....	290	410	520	1,500	1,400	760	2,050	1,450	700
28.....	330	340	540	2,250	1,100	1,400	1,600	1,200	900
29.....	480	470	540	2,200	980	2,000	1,850	1,300	880
30.....	500	390	540	2,100	.....	2,500	1,650	1,300	840
31.....	440	.....	490	2,000	.....	2,800	.....	1,400	.....
Mean....	376	433	376	898	937	845	2,060	1,610	1,040

Monthly discharge of SARANAC RIVER NEAR PLATTSBURG, for the nine months ending  
June 30, 1916

[Drainage area, 607 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF
	Maximum	Minimum	Mean	Per square mile	Depth in inches on drainage area
October .....	500	285	376	0.619	0.71
November .....	600	a280	433	0.713	0.80
December .....	540	a260	376	0.619	0.71
January .....	2,250	400	898	1.49	1.71
February .....	2,150	460	937	1.54	1.66
March .....	2,800	a440	845	1.39	1.60
April .....	4,100	a1,450	2,060	3.39	3.78
May .....	3,060	a960	1,610	2.65	3.06
June .....	1,700	a640	1,040	1.71	1.91

a Sunday.

Discharge measurements of SARANAC RIVER NEAR PLATTSBURG, during the nine  
months ending June 30, 1916

DATE	Made by	Gage height	Discharge
Oct. 12a.....	E. D. Burchard.....	2.02	460
April 29.....	A. H. Davison.....	3.20	1,860
April 29.....	A. H. Davison.....	3.24	1,980
May 27.....	O. W. Hartwell.....	2.94	1,440

a Measurement made by wading 10 feet below river gage.

## HUDSON RIVER DRAINAGE BASIN

### DESCRIPTION OF BASIN

The principal sources of the Hudson river lie in the wildest portion of the Adirondack mountains, in Essex county, north-eastern New York. A number of branches, any one of which might possibly be considered the main stream, form its upper waters; but if the highest collected and permanent body of water be assumed as the true head, then the source of the Hudson becomes Lake Tear-of-the-Clouds, which lies at an elevation of 4,322 feet above tide, in the centre of the triangle formed by Mount Marcy, Skylight and Gray peaks.

The river flows rather irregularly southward until it reaches the northern boundary of Saratoga county, where it makes a sharp turn and flows eastward for about 12 miles, passing through the mountains and forming, as it cuts across the rocky strata, several falls of great height and beauty. At Hudson Falls, just below Glens Falls, it makes another abrupt turn and flows southward, continuing in this direction until it empties into New York bay.

From Lake Tear-of-the-Clouds to the mouth of the river the distance by water is probably about 300 miles. The total area drained is 13,366 square miles. The river is tidal to Troy, which is also at the head of navigation.

The headwater region is mountainous in character, is in general heavily wooded and is dotted with numerous lakes and ponds. The rocks, belonging to the oldest formation and mainly granitic, are either bare or covered only with a layer of spruce duff, humus and forest litter. The river emerges from the mountain region a few miles west of Glens Falls and from there to Troy the topography is moderately rolling and the soil is chiefly sand. Below Troy the river follows the great depression which extends almost due north and south between New York bay and the St. Lawrence, flowing in an open valley bordered by well-cultivated lands, which rise with moderate slope from the stream. The Catskill Mountain region is reached 20 or 30 miles below Albany and thence to the

mouth of the river the immediate valley is flanked by high hills, the Highlands of Orange county, and the precipitous Palisades being especially noticeable.

The fall in the upper portion of the course is very rapid, amounting to about 64 feet per mile from Lake Tear-of-the-Clouds to the mouth of North creek, a distance of about 52 miles. From the mouth of North creek to the mouth of the Sacandaga the descent is nearly 14 feet per mile, distributed among rapids which diminish in frequency as the Sacandaga is approached. In the succeeding 26 miles to Fort Edward the river descends 418 feet more. One hundred and seventy-five feet is comprised within the three abrupt pitches at Palmer, Glens, and Bakers Falls, while most of the remainder occurs in the rapids between Jessup's Landing and the oxbow above Glens Falls. Between Glens Falls and Troy nearly the entire fall of the river is utilized for the development of water-power. Between Fort Edward and Troy the Hudson river is canalized as part of the Barge canal system for practically the entire distance.

The tributaries of the Hudson are numerous and many of them are large and important. Indian river, Schroon river and the Sacandaga unite with the main stream above Glens Falls and between the latter point and Troy it receives Batten kill, Fish creek, Hoosic river and the Mohawk, the latter having several important tributaries, including West and East Canada and Schoharie creeks. The tributaries below Troy include Catskill, Esopus and Rondout creeks and Wallkill river from the west and Kinderhook creek, Jansen kill, Wappinger creek, Fishkill creek and Croton river from the east.

Below Troy the bed of the Hudson river is depressed below tide-water level. The stage of the stream is controlled by tidal action, by the inflow of the main stream and by the lateral drainage jointly.

The mean annual precipitation on the total basin of the Hudson is probably about 43 inches. It reaches a maximum of more than 55 inches in the heights of the Adirondacks, while in the eastern portion of the drainage area, in southern Vermont, the mean annual total is only about 39 inches. Conditions during the winter period vary from the extreme cold and deep snow of the

Adirondacks to the areas in the southern portion of the basin, which are subject to frequent winter thaws.

The flow of the upper Hudson is controlled to some extent during the dry season by the use of Indian lake storage reservoir. The natural storage facilities in the Adirondack region, tapped on the east and south by the upper Hudson and the Mohawk, are unsurpassed, there being a great many ponds and lakes, many of large size and fed from extensive drainage areas.

The longest run-off record in the Hudson river drainage basin is that obtained at the upper dam at Mechanicville, which extends back to 1888.

### HUDSON RIVER

In the following pages will be found tables giving the daily discharge and monthly run-off of the Hudson river above Troy and of its tributaries at a considerable number of locations. These records are derived from various sources, which are indicated for records other than those maintained by this Department.

As to records of the Hudson river and tributaries it can only be said at this time that they are probably more consistent than would appear from a direct comparison. In some cases where the recorded run-off per square mile at adjacent stations differs, it does not necessarily follow that either one of the records is incorrect. There are wide variations in the hydrological conditions in different portions of the upper Hudson drainage basin. For example, the topography, culture, geology and soil for the Hudson and its tributaries above North Creek are all essentially different from the corresponding features of the drainage basin of Saratoga lake outlet. The hydrological features of both the above mentioned basins are essentially different from the corresponding features of the drainage basins of the Batten kill and Hoosic river. The conditions are somewhat further complicated by diversion from the Hudson river to supply the Champlain canal through Glens Falls feeder and at Northumberland dam.

The Hudson river has been canalized for the Barge canal between Troy and Fort Edward with the exception of a short distance at Stillwater and Northumberland and between the Fort Miller and Crocker's reef dams, where the canal is located on

the east bank for a distance of about 2.5 miles. Four existing dams and three new ones together with the necessary dredging create a series of pools with low-water navigable surfaces at elevation referred to Barge canal datum as follows:—

Above the new Federal dam at Troy, Elev. 15.2.—The old State dam at Troy has been removed, having been replaced by the new Federal dam, completed November 18, 1915, about 1,400 feet further upstream. The old State dam was a timber crib dam with a straight fixed crest about 1,080 feet long at an elevation averaging 13.5 (12.6 M. S. L.) on which flash-boards were usually maintained to Elev. 15.2 (14.3 M. S. L.). The new dam built by the Federal Government and located at the foot of Bond street is a concrete structure of the ogee type. The crest has a broken trace and consists of two main arms, one two feet higher than the other. The east and lower section abuts on the new lock and lies across and normal to the main channel, with a crest length of 586 feet at Elev. 15.2 (14.33 M. S. L.). Provision is made in this lower crest for the use of flash-boards two feet in height. The west and higher section extends obliquely downstream to an ice-pass adjacent to the power head-gates on the west bank. The crest of the higher section is 669 feet long and at Elev. 17.2 (16.33 M. S. L.). The ice-pass which is in line with the head-gates and parallel to the east section of the dam provides an opening for the passage of ice, drift, etc., 25.5 feet wide above Elev. 12.70 (11.83 M. S. L.), which will ordinarily be closed by flash-boards below crest of dam.

Above new dam No. 1, north of Waterford, Elev. 29.5.—This dam, located about 2.9 miles north of or upstream from the Waterford-Troy bridge across the Hudson river, consists of a concrete ogee crest totaling 602.5 feet at Elev. 29.5, having a broken trace made up of two arms. The one adjacent and normal to Barge canal lock No. 1 on the right or west bank is 100 feet long, the other, 502.5 feet in length, inclines downstream, abutting on the outer end of a battery of six Taintor gates, each having a clear span of 50 feet with sills at Elev. 15.0 lying normal to the direction of stream flow.

Above the lower dam at Mechanicville, Elev. 48.0.—This is an old dam now used by the Adirondack Electric Power Corporation.

Above the upper dam at Mechanicville, Elev. 67.5.— This is the old dam now used by the West Virginia Pulp and Paper Company, also known as the Duncan dam.

Above the old dam at Stillwater, Elev. 83.5.

Above the old dam at Northumberland, Elev. 102.5.— The river above the old dam at Fort Miller is not canalized.

Above the new dam at Crocker's reef, Elev. 119.0.— This dam is a concrete structure with a straight ogee crest in two sections. The east crest is 480 feet long and the west crest is 280 feet long, a total crest length of 760 feet at Elev. 119.0. This dam has an exceptionally level crest. There are no gates or power-wheels at this location and the entire flow of the river except that portion which is utilized for canal purposes at the Fort Miller lock and in the old Champlain canal, passes over the crest of the dam.

#### HUDSON RIVER AT NORTH CREEK

**Location.**— At the two-span steel highway bridge in the village of North Creek, Warren county, immediately above the mouth of North creek.

**Records available.**— September 21, 1907, to June 30, 1916.

**Drainage area.**— 804 square miles.

**Gage.**— Chain; read twice daily; datum unchanged.

**Control.**— Heavy gravel; considered fairly permanent.

**Discharge measurements.**— Made from the highway bridge.

**Regulation.**— The numerous lakes and ponds in the basin of the upper Hudson have a decided effect on the low-water flow; especially is this true of Indian lake. The use of these storage reservoirs in the spring in connection with log-driving makes the daily records somewhat uncertain.

**Winter flow.**— Discharge relation affected by ice. This effect varies gradually after the ice cover is formed and can be determined by frequent discharge measurements, and climatologic data.

**Extremes of discharge.**— Current period: Maximum stage recorded, 8.6 feet at 6 P. M., May 18; discharge, 14,100 second-feet. Minimum stage recorded, 2.60 feet at 5:30 P. M., October 25 and 7:00 A. M., October 26; discharge, 530 second-feet.

The discharge December 25 was estimated to be 378 second-feet. The discharge relation was affected by ice on this date.

1907-1916: Maximum stage recorded, 12.0 feet, during evening of March 27, 1913; discharge, 30,000 second-feet. Minimum stage recorded, 2.05 feet at 7:05 A. M., September 30, 1913; discharge, 168 second-feet.

**Accuracy.**—Discharge rating curve well defined. Determinations of discharge for open-water periods considered good.

**Cooperation.**—Established and maintained by the United States Geological Survey in coöperation with the State Conservation Commission.

Daily gage height, in feet, of HUDSON RIVER AT NORTH CREEK, for the nine months ending June 30, 1916. William Alexander, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	2.9	3.2	3.4	3.6	4.8	4.0	5.0	4.7	4.1
2.....	2.85	3.15	3.2	3.5	4.8	3.8	5.8	4.6	4.9
3.....	2.8	3.15	3.1	3.35	4.5	3.6	5.6	5.2	4.8
4.....	2.8	3.15	2.9	3.4	4.4	3.5	5.3	5.0	3.7
5.....	3.05	3.15	2.9	3.35	4.2	3.3	4.9	5.4	3.5
6.....	3.8	3.2	2.9	3.35	3.7	3.75	4.6	5.0	3.45
7.....	3.8	3.15	2.8	3.6	3.5	3.7	4.6	4.4	3.4
8.....	3.5	3.1	2.7	3.7	3.35	3.7	4.3	4.4	3.2
9.....	3.2	3.1	2.7	3.95	3.25	3.6	4.2	3.9	3.2
10.....	3.05	3.1	2.65	3.65	3.1	3.5	3.9	4.2	3.3
11.....	2.9	3.1	2.7	3.4	3.1	3.9	3.9	3.7	3.3
12.....	2.8	3.1	3.0	3.4	3.15	3.85	4.1	5.1	3.3
13.....	3.05	3.1	3.1	3.3	3.2	3.8	4.2	3.55	3.2
14.....	3.0	3.05	3.2	3.3	3.1	3.8	4.2	3.3	3.2
15.....	2.9	3.15	3.2	3.65	3.0	3.75	4.0	3.5	3.1
16.....	2.9	3.7	3.3	3.6	3.35	3.8	4.2	6.4	3.05
17.....	2.95	3.55	3.25	3.5	3.6	3.8	4.8	6.0	3.25
18.....	2.95	3.45	3.3	3.6	3.5	3.7	5.2	8.4	3.55
19.....	2.95	3.45	3.05	3.5	3.6	3.65	4.6	7.5	3.7
20.....	3.25	3.75	2.95	3.75	3.8	3.75	5.0	6.2	3.75
21.....	3.4	3.8	3.0	3.95	3.55	3.7	4.9	6.3	3.85
22.....	3.3	3.55	3.0	3.9	3.7	3.65	4.9	5.4	3.5
23.....	3.0	3.4	3.0	4.2	3.7	3.6	5.7	4.7	3.4
24.....	2.7	3.25	2.8	4.4	3.8	3.8	5.9	6.2	3.3
25.....	2.7	3.1	2.8	4.4	3.75	3.7	5.3	5.2	3.2
26.....	2.6	2.95	3.25	4.4	4.2	3.6	6.4	5.0	3.15
27.....	3.2	2.9	4.3	4.5	4.1	3.9	6.2	5.0	3.05
28.....	3.25	2.9	4.1	5.0	3.8	3.8	5.9	4.2	3.0
29.....	3.25	3.1	3.7	5.3	4.2	3.95	6.1	4.0	3.1
30.....	3.2	3.25	3.5	5.2	.....	4.4	4.9	5.8	3.0
31.....	3.2	.....	3.55	4.9	.....	4.6	.....	4.4	.....

NOTE.—Discharge relation affected by ice, December 11 to March 30.



Daily discharge, in second-feet, of HUDSON RIVER AT NORTH CREEK, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	790	1,100	1,850	1,100	3,430	1,980	4,010	8,490	2,370
2.....	745	1,040	1,100	890	8,290	1,990	5,840	3,230	3,810
3.....	700	1,040	990	840	2,700	1,480	5,380	4,440	3,610
4.....	708	1,040	790	890	2,760	1,280	4,660	4,010	1,760
5.....	940	1,040	790	840	2,370	1,040	3,810	4,890	1,480
6.....	1,910	1,100	790	840	1,690	1,620	3,230	4,010	1,420
7.....	1,910	1,090	700	1,100	1,480	1,550	8,290	2,870	1,350
8.....	1,480	990	610	1,220	1,220	1,550	2,700	2,870	1,100
9.....	1,100	990	610	1,550	1,100	1,420	2,530	2,060	1,100
10.....	940	990	570	1,160	990	1,280	2,060	2,530	1,220
11.....	790	990	530	940	990	1,840	2,060	1,760	1,220
12.....	700	990	745	890	990	1,760	2,370	4,220	1,220
13.....	940	990	810	790	990	1,990	2,830	1,550	1,100
14.....	800	940	890	790	940	1,690	2,580	1,220	1,100
15.....	790	1,040	890	1,160	700	1,550	2,210	1,480	990
16.....	790	1,760	870	1,040	1,160	1,550	2,530	7,400	940
17.....	840	1,550	840	940	1,480	1,620	2,610	6,340	1,160
18.....	840	1,420	910	1,040	1,350	1,480	4,440	13,500	1,550
19.....	940	1,490	855	990	1,490	1,490	3,230	10,900	1,760
20.....	1,160	1,840	570	1,160	1,760	1,550	4,010	6,860	1,840
21.....	1,350	1,910	554	1,420	1,350	1,480	3,810	7,130	1,980
22.....	1,220	1,550	516	1,350	1,550	1,420	2,810	4,890	1,480
23.....	890	1,350	516	1,760	1,550	1,350	5,600	3,420	1,350
24.....	610	1,160	404	1,980	1,690	1,620	6,090	6,860	1,220
25.....	610	990	378	2,060	1,620	1,480	4,660	4,440	1,100
26.....	530	840	745	2,060	2,210	1,350	7,400	4,010	1,040
27.....	1,100	790	3,090	2,210	2,140	1,760	6,860	4,010	940
28.....	1,160	790	1,750	3,610	1,690	1,620	6,090	2,530	890
29.....	1,160	990	1,250	4,440	2,210	1,910	6,600	2,210	990
30.....	1,100	1,160	990	4,010	.....	2,700	3,810	5,840	890
31.....	1,100	.....	1,040	3,420	.....	3,230	.....	2,870	.....
Mean.....	988	1,160	847	1,570	1,680	1,650	4,060	4,430	1,470

NOTE.— Discharge relation affected by ice, December 11 to March 30. Daily discharge given in this period is approximate.

Monthly discharge of HUDSON RIVER AT NORTH CREEK, for the nine months ending June 30, 1916

(Drainage area, 804 square miles)

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF	Accuracy
	Maximum	Minimum	Mean	Per square mile	Depth in inches on drainage area	
October.....	1,910	530	988	1.23	1.42	A
November.....	1,910	790	1,160	1.44	1.61	A
December.....	2,090	378	847	1.05	1.21	B
January.....	4,440	790	1,570	1.95	2.25	B
February.....	3,420	700	1,690	2.09	2.25	B
March.....	3,230	1,040	1,650	2.05	2.36	B
April.....	7,400	2,060	4,060	5.05	5.63	A
May.....	13,500	1,220	4,430	5.53	6.38	A
June.....	3,810	890	1,470	1.83	2.04	A

**Discharge measurements of HUDSON RIVER AT NORTH CREEK, during the nine months ending June 30, 1916**

DATE	Made by	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 14.....	E. D. Burchard.....	3.04	932
Dec. 23 <sup>a</sup> .....	E. D. Burchard.....	54.05	1,700
Jan. 11 <sup>a</sup> .....	E. D. Burchard.....	53.40	907
Jan. 25.....	E. D. Burchard.....	54.36	2,010
Feb. 2.....	E. D. Burchard.....	54.79	3,280
Feb. 2.....	E. D. Burchard.....	54.76	3,290
Feb. 11.....	E. D. Burchard.....	53.17	1,030
Feb. 15.....	E. D. Burchard.....	53.06	755
Feb. 18.....	E. D. Burchard.....	53.52	1,350
Mar. 3.....	E. D. Burchard.....	53.57	1,390
Mar. 16.....	O. W. Hartwell.....	53.73	1,510
April 26.....	A. H. Davison.....	5.94	6,060

<sup>a</sup> Measurement made under partial ice cover at regular section.

<sup>b</sup> Discharge relation affected by ice.

### HUDSON RIVER AT THURMAN

**Location.**—At the Delaware & Hudson Railroad bridge, near the Thurman railroad station, Warren county, about 2,000 feet below the mouth of Schroon river, and about 13 miles above the mouth of Sacandaga river.

**Records available.**—September 1, 1907, to June 30, 1916.

**Drainage area.**—1,550 square miles.

**Gage.**—Chain; read twice daily; datum unchanged.

**Control.**—Sand and gravel; fairly permanent.

**Discharge measurements.**—Made from the bridge.

**Regulation.**—The influence of storage at Indian lake and of mills on Schroon river is apparent at this station.

**Winter flow.**—Discharge relation affected by ice. Winter flow estimated from the determinations of combined flow at Riverbank and North Creek plus an estimated inflow between the two stations.

**Extremes of discharge.**—Current period: Maximum stage recorded, 7.77 feet at 3 p. m., May 18; discharge, 16,900 second-feet. Minimum stage recorded, 2.70 feet at 8 a. m., November 14; discharge, 960 second-feet.

1907–1916: Maximum stage, 12.5 feet during the late evening of March 27, 1913, determined by leveling from flood-marks; approximate discharge, 46,000 second-feet. Minimum stage recorded, 2.12 feet at 8:55 a. m. and 6:20 p. m., September 30, 1913; discharge, 290 second-feet.

**Accuracy.**—Accuracy of the records somewhat impaired by reason of accumulation of logs at the control point below the section,

and also around the piers of the bridge, which affect the discharge rating. Rating curve fairly well defined for normal conditions, and determinations of flow during the open-water season are considered fairly accurate.

**Cooperation.**—Gage heights furnished by the International Paper Company. Station established and maintained by the United States Geological Survey in coöperation with the State Conservation Commission.

Discharge measurements of HUDSON RIVER AT THURMAN, during the nine months ending June 30, 1916

DATE	Made by	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 8.....	O. W. Hartwell.....	5.47	2,270
Feb. 17 a.....	E. D. Burchard.....	b 5.15	2,140
May 24.....	O. W. Hartwell.....	6.51	11,800

a Measurement made under partial ice cover at highway bridge, 900 ft. above gage.

b Discharge relation affected by ice.

Daily gage height, in feet, of HUDSON RIVER AT THURMAN, for the nine months ending June 30, 1916. S. H. Spencer, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	2.8	3.1	3.3	.....	.....	.....	.....	5.6	4.1
2.....	2.85	3.0	3.25	.....	.....	.....	6.4	5.3	3.95
3.....	2.8	3.05	3.15	.....	.....	.....	6.0	5.6	3.8
4.....	2.85	3.05	3.1	.....	.....	.....	5.8	5.2	3.8
5.....	2.85	2.9	3.05	.....	.....	.....	5.5	5.5	3.8
6.....	3.5	2.9	2.95	.....	.....	.....	5.4	5.2	3.7
7.....	3.65	2.85	2.85	.....	.....	.....	5.3	4.7	3.65
8.....	3.5	2.95	2.8	.....	.....	.....	5.0	4.2	3.6
9.....	3.15	2.85	2.85	.....	.....	.....	4.9	4.2	3.55
10.....	3.0	2.85	2.7	.....	.....	.....	4.7	4.7	3.7
11.....	3.05	2.85	2.6	.....	.....	.....	4.7	3.85	3.55
12.....	2.9	2.85	3.0	.....	.....	.....	4.8	4.6	3.7
13.....	2.9	2.85	3.1	.....	.....	.....	4.9	3.85	3.75
14.....	3.05	2.7	2.95	.....	.....	.....	4.8	3.5	3.7
15.....	3.05	2.9	.....	.....	.....	.....	4.8	3.5	3.6
16.....	3.05	3.15	.....	.....	.....	.....	4.8	5.0	3.6
17.....	2.95	3.3	.....	.....	.....	.....	5.1	5.4	3.8
18.....	2.95	3.15	.....	.....	.....	.....	5.5	7.6	3.55
19.....	3.05	3.1	.....	.....	.....	.....	5.3	7.0	4.1
20.....	3.15	3.5	.....	.....	.....	.....	5.0	5.9	4.0
21.....	3.3	3.6	.....	.....	.....	.....	4.8	5.6	4.2
22.....	3.3	3.45	.....	.....	.....	.....	4.8	5.5	3.85
23.....	3.0	3.35	.....	.....	.....	.....	5.8	4.7	3.7
24.....	2.85	3.2	.....	.....	.....	.....	6.7	6.3	3.7
25.....	2.8	3.1	.....	.....	.....	.....	6.5	4.9	3.55
26.....	2.7	2.9	.....	.....	.....	.....	6.1	5.0	3.6
27.....	3.1	2.85	.....	.....	.....	.....	6.0	5.2	3.45
28.....	3.05	2.85	.....	.....	.....	.....	6.0	4.2	3.5
29.....	3.15	3.1	.....	.....	.....	.....	6.1	4.2	3.45
30.....	3.1	3.25	.....	.....	.....	.....	5.4	5.6	3.45
31.....	3.05	.....	.....	.....	.....	.....	.....	4.5	.....

NOTE.— Discharge relation affected by ice, December 1<sup>st</sup> to April 1, inclusive. Gage observations suspended, December 15 to April 1, inclusive.

Daily discharge, in second-feet, of HUDSON RIVER AT THURMAN, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1	1,080	1,550	1,940	.....	.....	.....	9,000	8,440	3,860
2	1,150	1,380	1,840	.....	.....	.....	11,400	7,430	3,460
3	1,080	1,400	1,640	.....	.....	.....	9,800	8,440	3,080
4	1,150	1,400	1,550	.....	.....	.....	9,140	7,100	3,080
5	1,150	1,220	1,460	.....	.....	.....	8,100	8,100	3,080
6	2,370	1,220	1,300	.....	.....	.....	7,760	7,100	2,840
7	2,720	1,150	1,150	.....	.....	.....	7,430	5,580	2,720
8	2,370	1,300	1,080	.....	.....	.....	6,470	4,140	2,600
9	1,640	1,150	1,150	.....	.....	.....	6,170	4,140	2,480
10	1,380	1,150	960	.....	.....	.....	5,580	5,580	2,840
11	1,460	1,150	.....	.....	.....	.....	5,580	3,200	2,480
12	1,220	1,150	.....	.....	.....	.....	5,870	5,290	2,840
13	1,220	1,150	.....	.....	.....	.....	6,170	3,200	2,960
14	1,460	960	.....	.....	.....	.....	5,870	2,370	2,840
15	1,460	1,220	.....	.....	.....	.....	5,870	2,370	2,600
16	1,460	1,640	.....	.....	.....	.....	5,870	6,470	2,600
17	1,300	1,940	.....	.....	.....	.....	6,780	7,760	3,080
18	1,300	1,640	.....	.....	.....	.....	8,100	16,200	2,480
19	1,460	1,550	.....	.....	.....	.....	7,430	13,700	3,860
20	1,640	2,370	.....	.....	.....	.....	6,470	9,500	3,590
21	1,940	2,600	.....	.....	.....	.....	5,870	8,440	4,140
22	1,940	2,260	.....	.....	.....	.....	5,870	8,100	3,200
23	1,380	2,040	.....	.....	.....	.....	9,140	5,580	2,840
24	1,150	1,740	.....	.....	.....	.....	12,500	11,000	2,840
25	1,080	1,550	.....	.....	.....	.....	11,700	6,170	2,480
26	960	1,220	.....	.....	.....	.....	10,200	6,470	2,600
27	1,550	1,150	.....	.....	.....	.....	9,860	7,100	2,260
28	1,460	1,150	.....	.....	.....	.....	9,860	4,140	2,370
29	1,640	1,550	.....	.....	.....	.....	10,200	4,140	2,260
30	1,550	1,840	.....	.....	.....	.....	7,760	8,440	2,260
31	1,460	.....	.....	.....	.....	.....	.....	5,000	.....
Mean....	1,490	1,500	1,320	2,610	3,450	3,100	7,930	6,800	2,890

NOTE.—Discharge relation affected by ice, December 11 to April 1, inclusive. Mean discharge in this period estimated by adding an estimated inflow to the sum of the flow at North Creek and Riverbank.

Monthly discharge of HUDSON RIVER AT THURMAN, for the nine months ending June 30, 1916

[Drainage area, 1,550 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF	Accu- racy
	Maximum	Minimum	Mean	Per square mile	Depth in inches on drainage area	
October.....	2,720	960	1,490	0.961	1.11	A
November.....	2,600	960	1,500	0.968	1.08	A
December.....	.....	.....	1,320	0.852	0.98	B
January.....	.....	.....	2,610	1.68	1.94	C
February.....	.....	.....	3,450	2.23	2.40	C
March.....	.....	.....	3,100	2.00	2.31	C
April.....	12,500	5,580	7,930	5.12	5.71	A
May.....	16,200	2,370	6,800	4.39	5.06	A
June.....	4,140	2,260	2,890	1.86	2.08	A

## HUDSON RIVER AT CORINTH

This station was established October 1, 1906, and is maintained in coöperation with the United States Weather Bureau. It is located at the mouth of Sturdevant creek on the right bank of the Hudson river about one-fourth mile upstream from the highway bridge across the Hudson river in the village of Corinth.

The gage is a vertical staff located on the downstream wing of the right-hand abutment of the highway bridge across the mouth of the creek. The gage is read twice daily — at 8 A. M. and 5 P. M. — to tenths.

Daily gage height, in feet, of HUDSON RIVER AT CORINTH, for the nine months ending June 30, 1916. E. H. Bowker, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1	1.85	2.3	3.2	3.1	5.55	2.8	5.2	4.1	2.35
2	1.8	2.3	3.05	3.5	4.7	2.65	5.9	3.75	2.15
3	2.05	2.3	2.75	3.9	4.25	2.6	5.85	3.75	2.25
4	2.25	2.2	2.4	4.0	3.95	2.55	5.85	3.45	2.35
5	2.6	2.2	2.45	3.8	3.6	2.5	5.2	3.65	2.5
6	2.95	2.2	2.6	4.0	3.5	2.5	4.95	3.25	2.35
7	3.0	2.2	2.35	4.4	3.25	2.5	4.75	3.2	2.3
8	2.9	2.1	2.3	4.4	2.9	2.5	4.45	3.2	2.3
9	2.75	2.1	2.3	4.25	2.6	2.4	4.1	2.7	2.45
10	2.7	2.1	2.25	4.1	2.55	2.4	3.75	2.7	2.5
11	2.5	2.2	2.1	4.1	2.25	2.3	3.5	2.55	2.6
12	2.15	2.3	2.2	4.2	2.2	2.45	3.6	2.4	2.75
13	1.95	2.2	2.2	4.4	1.9	2.65	3.75	2.4	2.85
14	2.15	2.45	2.2	4.25	1.65	2.7	3.85	2.5	2.8
15	2.5	2.8	2.2	4.15	1.45	2.4	4.0	2.65	2.8
16	2.85	2.9	2.1	4.0	1.4	2.2	4.3	3.6	2.95
17	2.75	2.75	2.1	3.9	1.6	2.2	4.4	4.5	3.15
18	2.55	2.6	2.4	3.8	1.8	2.3	4.55	5.45	3.45
19	2.55	2.75	2.6	3.7	1.8	2.3	4.65	5.55	3.7
20	2.65	2.95	2.7	3.6	1.7	2.3	4.35	5.5	3.8
21	2.85	3.15	2.45	3.65	1.6	2.45	4.25	5.1	3.65
22	2.75	3.35	2.25	3.9	1.6	2.6	4.3	4.65	3.5
23	2.55	3.55	2.3	4.0	1.6	2.6	4.65	3.85	3.3
24	2.5	3.45	2.75	4.15	1.5	2.6	5.45	4.6	3.2
25	2.4	3.1	3.45	4.5	1.75	2.6	5.4	4.1	3.1
26	2.3	2.7	3.7	4.75	2.7	2.7	5.65	3.55	2.9
27	2.2	2.3	3.8	4.95	2.8	2.85	5.35	3.4	2.9
28	2.1	2.5	3.9	5.45	2.8	3.3	5.15	2.9	2.9
29	2.2	2.75	3.65	5.35	2.8	4.0	4.95	2.8	2.75
30	2.25	3.1	3.4	5.3	.....	4.8	4.65	2.7	2.6
31	2.3	.....	3.15	5.55	.....	5.3	.....	2.6	.....

## HUDSON RIVER AT SPIER FALLS

**Location.**—One-half mile below the Spier Falls dam, Saratoga county, about  $11\frac{1}{2}$  miles below the mouth of Sacandaga river.

**Records available.**—October 7, 1912, to June 30, 1916.

**Drainage area.**—2,800 square miles. (Measured on U. S. Geological Survey topographic maps.)

**Gage.**—Gurley 2-day water-stage recorder and auxiliary sloping staff gage. The automatic gage is in a brick shelter five feet square, inside dimensions. Underneath the shelter, is a brick well  $3\frac{1}{2}$  feet square and 21 feet deep. This well is connected with the river by a 4-inch cast-iron water pipe 78 feet long. A shear gate-valve is set at the inner end of the pipe for use in cleaning the well when necessary. The outer end is fastened firmly in a concrete anchorage and is submerged at all stages. Inside the well is a hook gage used for setting the automatic gage. The sloping staff gage is mounted on small concrete piers 10 feet upstream from the shelter.

**Control.**—Coarse gravel and boulders.

**Discharge measurements.**—Made from a cable and car, located about 1,000 feet downstream from the automatic gage.

**Winter flow.**—Backwater from ice prevails only during extreme cold weather.

**Regulation.**—There is a large diurnal fluctuation in flow due to the operation of Spier Falls power-plant.

**Extremes of discharge.**—Current period: Maximum stage from water-stage recorder, 10.80 feet at 8 A. M., May 19; discharge, 28,000 second-feet. Minimum stage from water-stage recorder, 1.54 feet at 4 A. M., November 12; discharge, 380 second-feet.

1912-1916: Maximum stage from water-stage recorder, 18.59 feet at 12:25 A. M., March 28, 1913; discharge, 89,100 second-feet. Minimum stage recorded during measurement, September 15, 1912, gage height, 0.06 foot; discharge, 5.7 second-feet, power-plant being shut down at this time and the flow of the river being stored in its pond.

**Accuracy.**—Rating curve well defined. Estimates as published are excellent.

**Cooperation.**—Established and maintained by the United States Geological Survey in coöperation with the State Conservation Commission. The gage is operated by Mr. H. T. Wakely, chief operator at the power-plant.

Daily discharge, in second-feet, of HUDSON RIVER AT SPIER FALLS, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	2,030	2,690	4,360	3,970	14,700	7,590	16,500	16,100	7,000
2.....	2,060	2,570	3,960	3,860	14,000	7,060	20,800	14,000	5,960
3.....	1,260	2,680	3,830	4,450	12,900	6,380	22,900	14,600	5,120
4.....	2,300	2,590	3,480	3,550	11,500	5,680	24,100	12,900	5,050
5.....	2,490	2,460	2,170	3,400	9,970	5,070	21,800	13,300	4,980
6.....	3,380	2,730	3,270	3,800	9,080	4,930	19,800	12,100	4,450
7.....	4,510	1,380	2,540	4,620	8,190	4,660	18,500	12,000	3,960
8.....	4,290	2,260	2,340	4,790	6,620	4,580	17,000	10,300	3,910
9.....	3,660	2,540	2,580	4,390	5,620	4,320	15,400	10,100	3,720
10.....	2,850	2,310	2,540	4,650	5,440	4,190	13,800	8,220	3,950
11.....	2,670	2,500	2,190	4,200	4,910	4,020	12,400	7,730	4,310
12.....	3,110	2,240	1,070	4,330	4,430	3,770	12,700	7,280	4,200
13.....	2,670	1,960	2,470	3,860	3,750	3,950	13,800	7,820	4,370
14.....	2,820	1,060	2,080	3,750	4,100	3,890	14,300	6,080	4,110
15.....	2,830	2,560	2,060	3,920	2,530	4,380	14,800	4,390	3,990
16.....	2,260	2,690	2,190	3,700	3,310	3,650	15,100	6,480	3,860
17.....	3,020	3,490	2,240	3,900	3,900	3,540	16,300	13,300	5,080
18.....	3,350	3,240	2,980	3,240	4,400	3,310	18,100	24,000	6,620
19.....	3,270	3,380	1,760	3,290	4,260	3,340	18,200	26,500	7,480
20.....	3,060	3,310	4,180	2,850	3,790	4,010	16,900	22,600	7,540
21.....	3,620	6,080	3,210	2,550	4,210	3,550	16,500	16,000	7,380
22.....	3,670	6,090	3,100	3,090	3,170	3,930	16,600	15,800	6,560
23.....	3,590	5,300	2,840	3,980	3,190	3,510	18,600	13,400	5,440
24.....	2,240	4,580	3,170	5,780	3,710	3,650	22,200	15,000	5,030
25.....	3,000	3,930	2,020	6,210	3,600	3,120	22,700	12,400	4,630
26.....	2,550	3,960	3,910	6,280	5,820	2,980	23,200	11,200	4,490
27.....	2,580	2,940	5,280	7,280	8,760	3,910	21,700	10,000	4,170
28.....	2,620	2,080	6,040	10,300	8,130	4,760	20,400	7,120	4,540
29.....	3,030	3,790	5,830	13,300	7,450	6,880	18,600	6,420	4,000
30.....	3,110	3,400	5,000	13,800	.....	10,300	17,200	8,980	3,770
31.....	1,800	.....	4,460	14,000	.....	14,100	.....	10,900	.....
Mean.....	2,890	3,090	3,200	5,330	6,430	4,940	18,000	12,300	4,980

NOTE.—Daily discharge is the mean of 24 hourly discharge values for each day. Run-off not corrected for storage at Indian lake and other reservoirs.

Monthly discharge of HUDSON RIVER AT SPIER FALLS, for the nine months ending June 30, 1916

[Drainage area, 2,800 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF	Accuracy
	Maximum	Minimum	Mean	Per square mile	Depth in inches on drainage area	
October.....	4,510	α 1,260	2,890	1.03	1.19	A
November.....	6,090	α 1,060	3,090	1.10	1.23	A
December.....	6,040	α 1,070	3,200	1.14	1.31	A
January.....	14,000	2,550	5,330	1.90	2.19	A
February.....	14,700	3,170	6,430	2.30	2.48	A
March.....	14,100	α 2,980	4,940	1.76	2.03	A
April.....	24,100	13,800	18,000	6.43	7.17	B
May.....	26,500	4,390	12,300	4.39	5.06	B
June.....	7,540	3,730	4,980	1.78	1.99	A

α Sunday.

Discharge measurements of HUDSON RIVER AT SPIER FALLS, during the nine months ending June 30, 1916

DATE	Made by	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 7.....	O. W. Hartwell.....	4.63	4,860
April 1.....	O. W. Hartwell.....	8.15	15,600
April 2.....	O. W. Hartwell.....	9.23	20,100
April 3.....	O. W. Hartwell.....	9.59	21,390
April 25.....	A. H. Davison.....	9.29	19,800

### HUDSON RIVER AT VARNEY FARM, ABOVE GLENS FALLS

This station, established January 27, 1914, is located on the left bank of the Hudson river about 3 miles upstream from the feeder dam at Glens Falls. The gage is a vertical staff attached to a pine tree about 800 feet north of the fence running toward the river from the barn on the Varney farm. Readings are taken twice daily — between 6 and 8 A. M. and 4 and 7 P. M. — to tenths.

Daily elevation of water-surface (B. C. Datum) of HUDSON RIVER AT VARNEY FARM, ABOVE GLENS FALLS, for the nine months ending June 30, 1916. W. D. Barber, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	282.55	282.4	283.65	282.7	286.65	284.25	286.6	287.35	284.45
2.....	282.65	282.5	283.25	283.1	286.75	283.8	287.4	286.55	284.25
3.....	282.6	282.35	283.35	282.75	286.5	283.8	288.0	285.85	284.05
4.....	282.55	282.2	283.45	282.55	286.45	283.65	288.3	286.45	284.15
5.....	282.3	282.35	281.7	282.35	286.6	283.65	287.6	286.15	281.15
6.....	282.3	282.25	282.85	282.8	286.45	283.8	287.45	286.05	284.45
7.....	283.55	282.05	283.5	282.65	286.2	283.7	287.05	286.1	284.45
8.....	283.85	282.25	283.4	282.65	286.25	283.55	286.85	286.2	284.5
9.....	283.75	282.15	283.25	282.55	286.05	283.65	286.1	286.35	284.3
10.....	282.6	282.1	283.25	282.7	286.15	283.7	285.9	285.9	284.2
11.....	282.6	283.3	283.35	282.75	285.45	282.95	285.7	285.45	284.2
12.....	283.3	285.35	282.75	282.6	285.3	283.15	285.95	285.05	284.2
13.....	283.15	285.1	282.45	282.6	285.55	282.95	286.1	284.95	284.55
14.....	283.3	282.3	282.25	282.25	285.1	282.95	285.95	284.7	283.65
15.....	283.25	283.45	282.4	281.9	284.05	282.95	285.75	285.15	283.6
16.....	283.45	283.85	282.05	281.9	283.9	283.2	285.5	286.4	285.05
17.....	283.35	284.35	282.25	281.75	284.0	283.0	285.25	287.6	285.6
18.....	283.45	284.35	282.3	280.05	283.75	283.0	285.95	288.5	286.05
19.....	283.45	284.05	282.35	279.05	283.45	283.0	286.95	289.7	286.1
20.....	283.7	284.05	282.4	278.75	283.05	282.75	286.8	289.75	286.55
21.....	283.65	285.3	282.35	278.7	283.05	282.8	287.05	288.1	286.45
22.....	283.7	284.15	282.15	278.7	283.05	282.65	287.25	286.55	286.35
23.....	283.75	284.05	282.3	281.85	282.9	282.65	287.7	285.65	286.45
24.....	283.2	283.15	282.4	284.95	283.0	282.55	287.9	286.05	286.0
25.....	283.05	283.05	282.6	286.15	283.05	282.4	288.2	285.8	285.2
26.....	283.0	282.8	285.4	286.3	283.25	282.25	288.4	285.5	284.75
27.....	282.9	282.8	284.7	286.45	284.85	282.4	288.3	284.75	284.65
28.....	283.1	283.45	283.6	286.9	284.65	283.0	287.65	284.8	284.0
29.....	283.2	283.65	283.6	287.3	284.65	284.15	287.6	284.7	283.8
30.....	283.15	283.5	283.05	287.15	.....	285.05	287.45	284.65	283.75
31.....	282.5	.....	282.75	286.75	.....	286.55	.....	281.55	.....



## HUDSON RIVER AT GLENS FALLS

This station, located above the feeder dam at Glens Falls, was established March 9, 1905, and is maintained in coöperation with the U. S. Weather Bureau. A vertical staff on crib near left bank about 500 feet above dam is read to tenths twice daily — at 8 A. M. and 5 P. M. (December–March, 8 A. M. and 4 P. M.).

In connection with the enlargement of the Glens Falls feeder to supply the summit level of the Champlain branch of the Barge canal system, the feeder dam was reconstructed. A new concrete structure with an ogee crest at Elev. 282.0 and 615 feet in length, including a logway 20 feet wide at Elev. 280.0 with provision for flash-boards to crest, was built immediately below the old timber crib dam which had a very irregular crest averaging about Elev. 281.0 about 618 feet long. There are large bulkheads for power purposes at each end of the dam.

Daily elevation of water-surface (B. C. Datum) of HUDSON RIVER ABOVE FEEDER DAM AT GLENS FALLS, for the nine months ending June 30, 1916. A. B. Fisher, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	282.88	282.68	282.18	281.58	287.48	283.78	285.33	286.13	284.58
2.....	282.83	281.88	282.63	282.63	287.33	283.73	286.28	285.18	284.28
3.....	282.86	282.06	282.72	284.72	287.28	283.58	286.53	285.33	284.08
4.....	282.98	282.02	282.12	281.98	287.08	283.38	286.88	285.48	283.88
5.....	282.12	281.78	281.68	280.82	286.63	283.23	286.48	285.28	284.08
6.....	282.93	282.03	282.18	281.28	286.38	283.18	286.28	284.98	283.83
7.....	283.68	282.38	283.83	282.63	286.43	283.18	286.08	284.88	283.73
8.....	283.73	282.93	282.98	283.48	286.13	283.18	285.88	284.68	282.73
9.....	283.93	282.18	282.48	282.78	285.88	283.18	285.58	284.98	282.68
10.....	283.28	281.98	282.98	282.12	285.73	282.93	285.38	284.43	283.28
11.....	283.23	283.08	282.98	282.43	285.83	282.83	285.13	284.58	284.03
12.....	283.23	284.18	282.63	282.48	285.18	282.78	285.18	284.58	284.58
13.....	282.98	283.48	282.18	281.63	284.53	282.93	285.43	284.48	284.53
14.....	283.08	282.68	282.08	281.43	285.38	283.03	285.48	284.18	284.38
15.....	283.13	283.03	281.63	281.68	283.48	282.93	285.63	283.63	284.23
16.....	283.28	282.68	281.93	280.18	283.18	283.03	285.93	283.58	283.83
17.....	283.33	284.13	281.98	281.88	283.33	282.78	285.78	283.28	284.28
18.....	283.28	284.43	282.08	281.18	282.98	282.63	285.93	287.03	286.03
19.....	283.33	284.43	282.43	279.93	282.88	282.53	286.08	287.43	286.18
20.....	283.13	284.13	282.53	279.28	282.63	283.13	285.88	286.93	286.28
21.....	283.43	285.08	282.83	279.13	282.88	282.83	285.88	286.53	286.28
22.....	283.48	283.88	282.13	280.33	282.18	282.88	285.83	286.88	286.08
23.....	283.38	283.78	281.38	281.38	282.28	282.48	286.03	285.63	285.73
24.....	283.03	283.08	280.93	284.33	282.48	282.53	286.53	286.68	285.58
25.....	283.08	283.13	281.33	285.18	282.58	282.38	286.58	285.53	285.28
26.....	283.03	282.98	284.68	285.03	283.08	282.13	286.83	285.33	285.23
27.....	282.93	282.63	286.18	285.58	284.13	282.88	286.53	285.13	284.78
28.....	283.03	282.43	286.18	285.98	284.03	283.13	286.33	284.53	285.13
29.....	283.13	283.63	286.23	286.63	283.83	283.58	286.03	284.88	284.83
30.....	283.13	281.68	285.48	287.43	.....	284.23	286.18	284.63	284.23
31.....	282.73	.....	282.93	287.48	.....	284.73	.....	284.78	.....

## HUDSON RIVER AT TERMINAL, FORT EDWARD

This station, established November 14, 1915, is located on the left, or north bank of the Hudson river at the easterly, or downstream end of the canal terminal wall and is about 550 feet upstream from the Bridge street gage and about 4,700 feet above the junction of the river and the Barge canal below lock No. 7. This gage, a vertical staff, indicates practically the same water-surface as the Bridge street gage, which it supersedes, and is read twice daily — at 8 A. M. and 5 P. M. — to half-tenths

Daily elevation of water-surface (B. C. Datum) of HUDSON RIVER AT TERMINAL, FORT EDWARD, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....			120.70	121.00	123.95	121.80	124.35	124.15	121.48
2.....			120.63	120.55	123.70	121.60	125.00	123.15	121.40
3.....			120.54	121.62	123.35	121.60	125.70	123.95	121.65
4.....			120.34	120.37	123.10	121.45	126.15	123.35	120.80
5.....			120.23	120.48	122.65	121.05	125.50	123.05	121.10
6.....			120.00	120.68	121.85	121.35	125.05	122.95	120.85
7.....			120.35	120.78	122.10	121.30	124.60	122.75	120.68
8.....			120.25	121.08	121.63	121.32	124.30	122.82	120.82
9.....			120.20	120.70	121.23	121.30	123.72	122.80	120.70
10.....			120.15	121.07	121.05	121.32	123.45	121.95	120.60
11.....			120.20	120.78	121.10	121.35	122.98	122.68	120.75
12.....			119.90	120.80	120.60	121.30	122.95	121.80	120.95
13.....			120.00	120.78	120.68	121.52	123.30	122.30	120.70
14.....		119.90	120.25	120.65	120.65	121.60	123.52	121.45	120.70
15.....		119.80	120.50	120.68	120.30	121.70	123.78	121.15	120.55
16.....		120.28	120.15	120.38	120.50	121.68	123.65	120.75	120.70
17.....		120.28	120.10	120.65	120.50	121.65	123.90	123.35	120.70
18.....		120.55	120.15	120.55	120.60	121.30	124.45	125.80	121.00
19.....		120.40	120.10	120.40	120.90	120.68	124.52	126.78	121.70
20.....		120.60	120.50	120.45	120.15	120.78	124.05	126.42	121.75
21.....		120.95	120.63	120.80	120.70	120.80	124.25	124.95	121.45
22.....		121.50	120.63	120.55	120.35	120.72	124.30	123.45	121.48
23.....		121.25	120.30	120.48	120.45	120.78	124.35	123.58	121.10
24.....		120.93	120.40	121.35	120.35	120.72	125.35	124.00	121.05
25.....		120.60	119.92	121.60	120.53	120.68	125.45	124.15	120.75
26.....		120.73	120.63	121.78	121.20	120.20	126.05	122.70	121.00
27.....		120.65	121.30	121.95	123.40	120.85	125.43	122.32	120.70
28.....		119.85	121.43	122.95	122.45	120.95	125.15	121.70	120.85
29.....		120.50	121.43	124.00	121.60	121.45	124.95	121.55	120.15
30.....		120.75	121.20	123.78	.....	122.50	124.60	121.25	120.65
31.....		.....	121.20	124.08	.....	123.90	.....	123.05	.....

Note.— Established November 14, 1915; for previous record in this vicinity see Bridge street Fort Edward.

**HUDSON RIVER AT BRIDGE STREET, FORT EDWARD**

This station, established April 11, 1904, is located at Fort Edward on the downstream end of the pier nearest the left bank of the river on the Bridge street bridge across the Hudson river. This gage is about 2,500 feet below the dam of the International Paper Company. The gage is read twice daily — at 8 A. M. and 5 P. M.

On November 14, 1915, this station was discontinued and a new record started at the Fort Edward canal terminal, about 550 feet farther upstream.

Daily elevation of water-surface (B. C. Datum) of HUDSON RIVER AT BRIDGE ST. FORT EDWARD, for the nine months ending June 30, 1916. F. H. Wells, Observer

DAY	Oct.	Nov.	DAY	Oct.	Nov.	DAY	Oct.	Nov.
1.....	120.04	120.17	11.....	120.35	120.15	21.....	120.47	.....
2.....	119.94	120.37	12.....	120.17	120.12	22.....	120.59	.....
3.....	119.82	120.40	13.....	120.12	120.40	23.....	120.49	.....
4.....	119.74	120.50	14.....	120.07	.....	24.....	120.07	.....
5.....	119.82	120.50	15.....	120.24	.....	25.....	120.35	.....
6.....	119.92	120.27	16.....	120.12	.....	26.....	120.22	.....
7.....	120.37	119.97	17.....	120.27	.....	27.....	120.02	.....
8.....	120.32	120.08	18.....	120.49	.....	28.....	120.22	.....
9.....	120.67	120.30	19.....	120.42	.....	29.....	120.17	.....
10.....	120.07	120.17	20.....	120.22	.....	30.....	120.39	.....
						31.....	119.92	.....

NOTE.—Station discontinued November 14, 1915; for continuance of observation in this vicinity see record of gaging station at Terminal, Fort Edward.

**HUDSON RIVER AT CROCKER'S REEF DAM**

**Location.**—At Crocker's reef dam across the Hudson river at the head of Thompson island about six miles below Fort Edward and about 2.2 miles above the dam at Fort Miller.

**Records available.**—Water-surface elevations, April 11, 1904, to June 30, 1916. Discharge, September 1, 1907, to June 30, 1916. Dam completed, August 27, 1907.

**Drainage area.**—2,959 square miles.

**Gage.**—Vertical staff on upper end of guard-gate pier in Barge canal opposite dam indicating water-surface practically equivalent to that at junction of canal and river about 2,500 feet above dam is read twice daily to tenths and published in table following. In addition, since January 8, 1916, a staff, attached to large elm tree on left, or east bank of the river about 450 feet above dam, has been read once daily simultaneously with a third reading of the guard-gate gage. Discharge estimates are based upon this river gage record when available.

**Control.**—Crest of dam at Elev. 119.0, 760 feet long in two straight sections separated by head of island—the east, 480 feet and the west, 280 feet in length. The dam is of concrete with an ogee crest carefully trowled to a uniform level for use as a gaging weir. This dam is free from gates or power-wheels. During higher stages the dam is submerged by backwater from the dam at Fort Miller.

**Discharge computations.**—Discharge estimates are based on theoretical computations using a varying coefficient and correcting for submergence. Velocity of approach has not been allowed for as it was assumed that the surface slope from the gage to the dam would be approximately equivalent to the head due to velocity of approach.

**Extremes of discharge.**—Current period: Maximum stage recorded, Elev. 123.42 on May 19; discharge, 24,800 second-feet. Minimum stage recorded, Elev. 119.59 at 4:00 P. M., December 12 and 25; discharge, 1,060 second-feet.

1907–1916: Maximum stage recorded, Elev. 129.56 on March 28, 1913, at 4 P. M.; discharge, 72,800 second-feet. A considerably higher stage is believed to have been reached earlier in the day. The 8:00 A. M. reading was not made. Minimum stage recorded, Elev. 119.26 on June 19, 1913, at 7:00 A. M. and 5:00 P. M.; discharge, 280 second-feet.

**Accuracy.**—Discharge for current period has been reduced upon the same basis as used in former years. Allowance for submergence has been based upon estimated water-surface below the dam and actual conditions as observed indicate that with about three feet of water over the dam there is somewhat more submergence than has been allowed. From July 26, 1915, to January 8, 1916, a correction varying with the gage height has had to be applied to records obtained at the guard-gate in the Barge canal to obtain water-surface elevation above the dam.

**Diversion.**—During the navigation season water is diverted above this station to supply the old Champlain canal and the new Barge canal lock at Fort Miller. Except for the above the entire flow of the Hudson river passes over the dam.

**Regulation.**—Daily flow affected somewhat by local storage above power dams at Fort Edward and Glens Falls.

Daily elevation of water-surface (B. C. Datum) of HUDSON RIVER ABOVE CROCKER'S REEF DAM, for the nine months ending June 30, 1916. John H. Donnelly, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	119.8	120.1	120.4	120.2	122.5	121.15	122.85	122.6	121.0
2.....	119.85	120.15	120.4	120.1	122.3	121.05	123.4	122.25	120.85
3.....	120.05	120.05	120.35	120.2	122.1	121.0	123.8	122.15	120.7
4.....	120.0	120.1	120.3	120.5	121.8	120.8	123.85	122.25	120.5
5.....	119.85	120.1	119.95	120.2	121.5	120.55	123.65	122.0	120.7
6.....	120.1	120.2	120.05	120.25	121.25	120.6	123.4	121.9	120.85
7.....	120.1	119.9	120.05	120.4	121.1	120.6	123.05	121.75	120.55
8.....	120.2	120.15	120.05	120.4	120.95	120.55	123.75	121.6	120.65
9.....	120.3	120.15	120.0	120.3	120.7	120.5	123.45	121.8	120.5
10.....	120.2	120.1	120.05	120.4	120.6	120.45	122.25	121.1	120.35
11.....	120.35	120.2	120.05	120.5	120.6	120.45	122.0	121.3	120.15
12.....	120.15	120.15	119.7	120.4	120.4	120.3	121.95	120.95	120.55
13.....	120.15	120.05	119.9	120.5	120.25	120.55	122.15	121.3	120.5
14.....	120.25	119.95	119.8	120.4	120.45	120.45	122.25	120.75	120.45
15.....	120.05	120.1	119.9	120.35	120.35	120.4	122.4	120.7	120.45
16.....	120.1	120.15	119.85	120.05	120.25	120.25	122.35	120.55	120.55
17.....	120.0	120.0	119.9	120.2	120.25	120.35	122.45	122.1	120.6
18.....	120.1	120.15	120.05	120.25	120.25	120.3	122.8	123.6	120.8
19.....	120.25	120.25	119.95	120.1	120.25	120.05	122.9	124.1	121.1
20.....	120.2	120.55	120.2	120.1	120.2	120.45	122.65	123.75	121.05
21.....	120.1	120.1	120.2	120.2	120.25	120.3	122.75	123.05	121.1
22.....	120.25	121.0	120.1	120.1	120.25	120.25	122.65	122.7	121.0
23.....	120.2	120.75	120.15	120.05	120.1	120.3	122.7	122.35	120.75
24.....	120.1	120.6	120.15	120.65	120.2	120.3	123.4	122.05	120.55
25.....	120.2	120.4	119.75	121.0	120.3	120.25	123.55	122.2	120.45
26.....	120.1	120.4	120.4	121.0	120.8	120.15	123.8	121.8	120.4
27.....	120.2	120.25	121.0	121.25	121.55	120.55	123.85	121.5	120.45
28.....	120.25	119.85	120.9	121.85	121.4	120.7	123.3	121.05	120.45
29.....	120.2	120.15	120.75	122.5	121.15	121.2	123.1	121.0	120.5
30.....	120.25	120.25	120.55	122.3	.....	121.9	123.1	120.95	120.35
31.....	120.1	.....	120.5	122.4	.....	122.65	.....	121.4	.....

NOTE.—Above record taken in canal at guard-gate; see station description under gage.

Daily discharge, in second-feet, of HUDSON RIVER AT CROCKER'S REEF DAM, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	1,670	2,670	3,810	3,030	13,500	6,990	16,800	15,900	6,550
2.....	2,170	2,880	3,810	2,670	13,400	6,890	19,100	14,100	6,050
3.....	2,470	2,470	3,590	3,030	11,900	6,050	21,000	13,400	5,280
4.....	2,290	2,670	3,390	4,240	10,900	5,840	23,800	14,100	3,990
5.....	1,840	2,670	2,140	3,030	9,490	3,990	21,000	12,300	5,170
6.....	2,670	3,030	2,470	3,230	8,280	4,480	19,100	12,500	4,380
7.....	2,670	2,020	2,470	3,810	7,860	4,320	18,100	10,400	4,290
8.....	3,036	2,880	2,470	4,490	6,050	4,240	16,300	10,100	3,510
9.....	3,430	2,830	2,290	8,390	5,060	3,990	14,100	12,600	3,490
10.....	3,030	2,670	2,470	4,950	4,530	3,680	13,400	7,100	3,070
11.....	3,590	3,030	2,470	8,990	4,440	3,900	11,900	8,700	3,070
12.....	2,830	2,830	1,370	3,990	3,810	2,230	11,400	6,090	4,530
13.....	2,830	2,470	2,020	8,550	3,190	4,480	12,400	8,890	4,090
14.....	3,230	2,140	1,670	3,990	4,440	3,770	12,900	4,580	4,190
15.....	2,470	2,670	2,020	3,990	3,190	8,690	14,300	5,560	3,860

Daily discharge, in second-feet, of HUDSON RIVER AT CROCKER'S REEF DAM, for the nine months ending June 30, 1916 — *Continued*

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
16. ....	2,670	2,830	1,840	2,750	3,270	3,770	13,100	3,860	3,990
17. ....	2,290	2,290	2,020	3,150	3,150	2,950	14,100	12,000	3,680
18. ....	2,670	2,830	2,470	3,550	3,550	3,880	15,500	19,500	5,280
19. ....	3,230	3,230	2,140	2,350	2,050	2,050	16,700	24,800	8,400
20. ....	3,030	4,480	3,030	2,750	3,150	3,990	15,600	22,200	7,160
21. ....	2,670	2,670	3,030	2,750	3,810	3,070	16,500	18,000	6,710
22. ....	3,230	6,400	2,670	2,750	3,680	2,150	15,100	16,200	6,680
23. ....	3,030	5,390	2,830	3,150	2,750	3,350	14,900	14,400	5,500
24. ....	2,670	4,670	2,830	4,480	2,750	3,350	18,800	12,300	4,760
25. ....	3,030	3,810	1,520	5,500	3,350	3,230	21,100	14,100	4,950
26. ....	2,670	3,810	3,810	6,050	4,240	1,880	22,400	10,800	5,170
27. ....	2,030	3,230	6,600	6,880	8,100	2,990	19,500	9,420	3,990
28. ....	3,230	1,840	6,100	9,350	8,700	3,990	19,100	7,220	4,810
29. ....	3,030	2,830	5,390	13,400	6,880	6,000	18,300	6,710	4,720
30. ....	3,230	3,230	4,480	13,600	.....	10,100	17,900	5,890	4,040
31. ....	2,670	.....	4,240	13,400	.....	14,700	.....	8,880	.....
Mean ....	2,794	2,119	3,015	4,846	5,571	4,564	16,800	11,737	4,843

NOTE.—Discharge, October 1–January 7, inclusive, and January 9, computed by applying correction to guard-gate elevations.

Monthly discharge of HUDSON RIVER AT CROCKER'S REEF DAM, for the nine months ending June 30, 1916

(Drainage area, 2,959 square miles)

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF Depth in inches on drainage area
	Maximum	Minimum	Mean	Per square mile	
October. ....	3,580	1,670	2,794	0.944	1.09
November. ....	6,600	2,020	3,119	1.054	1.18
December. ....	6,600	1,370	3,015	1.019	1.18
January. ....	13,400	2,350	4,846	1.638	1.89
February. ....	13,500	2,750	5,871	1.984	2.14
March. ....	14,700	1,880	4,564	1.542	1.78
April. ....	23,500	11,400	16,800	5.678	6.34
May. ....	24,800	3,880	11,737	3.967	4.57
June. ....	8,400	3,070	4,843	1.637	1.83

#### HUDSON RIVER ABOVE DAM, FORT MILLER

This station, established April 11, 1904, is located on the east bank of the Hudson river above the dam at Fort Miller. The gage is a staff located at the head-gates of the paper-mill. The gage is read twice daily — at 8 A. M. and 5 P. M. — to tenths. This dam has not been affected by Barge canal construction.

**Emendation.**—Previously published water-surface elevations at this station for dates from August 1, 1913, to September 30, 1915, should be increased 0.31 foot.

Daily elevation of water-surface (B. C. Datum) of HUDSON RIVER ABOVE DAM AT  
FORT MILLER, for the nine months ending June 30, 1916. L. C. Brasier and W.  
L. Sanders, Observers

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	115.7	115.5	115.9	116.0	117.55	116.6	a	117.7	116.45
2.....	115.7	115.55	116.0	116.15	117.5	116.55	a	117.5	116.25
3.....	115.85	115.5	115.9	116.0	117.35	116.4	a	117.4	116.1
4.....	115.45	115.5	115.7	115.95	117.15	116.3	a	117.5	116.3
5.....	115.55	115.4	115.95	115.75	116.95	116.45	118.35	117.25	116.25
6.....	115.55	115.55	115.5	115.75	116.95	116.25	118.1	117.3	116.15
7.....	116.05	115.85	115.75	115.8	116.7	116.1	118.0	117.15	115.95
8.....	116.1	115.45	115.65	116.0	116.6	116.05	117.8	116.85	115.95
9.....	115.95	115.5	115.65	116.3	116.2	116.0	117.7	117.15	115.85
10.....	116.15	115.35	115.55	116.05	116.15	116.05	117.45	116.5	115.6
11.....	115.6	115.3	115.6	115.95	116.25	115.9	117.2	116.4	116.1
12.....	115.6	115.25	115.65	115.95	116.35	116.2	117.25	116.5	116.2
13.....	115.5	115.4	115.55	115.8	116.65	116.2	117.45	116.8	115.95
14.....	115.45	115.65	115.75	115.9	116.2	116.0	117.45	116.55	115.95
15.....	115.6	115.05	115.75	115.85	115.8	116.0	117.9	116.15	115.85
16.....	115.45	115.45	115.6	115.8	115.85	115.8	117.7	116.05	115.85
17.....	116.15	115.6	115.4	115.85	115.8	115.85	117.75	117.5	116.0
18.....	115.85	115.8	115.6	116.05	115.85	115.85	117.9	116.8	115.5
19.....	115.8	115.8	116.0	115.85	115.9	116.3	118.1	118.85	116.45
20.....	115.7	115.85	115.85	115.95	116.4	116.1	117.75	118.15	116.5
21.....	115.75	116.5	115.9	115.6	116.05	115.9	117.85	118.2	116.55
22.....	115.85	116.45	115.8	115.7	115.65	115.85	117.75	117.8	116.45
23.....	115.8	116.2	115.75	116.15	115.65	115.65	117.95	117.45	116.2
24.....	116.05	116.15	115.65	116.25	115.75	115.35	118.2	117.3	116.1
25.....	115.7	115.85	115.95	116.3	115.8	115.8	118.35	117.45	116.3
26.....	115.6	115.9	116.35	116.4	116.15	116.1	118.6	117.1	116.2
27.....	115.5	115.8	116.3	116.55	117.1	116.05	118.15	116.85	115.85
28.....	115.7	115.85	116.55	117.0	116.9	116.05	118.1	116.75	115.9
29.....	115.5	115.75	116.35	117.45	116.6	116.5	118.1	116.6	115.9
30.....	115.6	116.0	116.35	117.55	.....	117.15	118.05	116.25	115.85
31.....	115.7	.....	116.15	117.55	.....	117.75	.....	116.7	.....

a No record.

#### HUDSON RIVER BELOW DAM, FORT MILLER

This station, established May 1, 1904, was originally located on the wall near the tail-race of the paper company on the left or east bank of the river. Since April, 1911, it has been located below Barge canal lock No. 6 on the third crib from the lower approach wall. This gage indicates the upper end of the Northumberland and Fort Miller pool. It is read twice daily — at 8 A. M. and 5 P. M. — to tenths.

Daily elevation of water-surface (B. C. Datum) of HUDSON RIVER BELOW DAM AT FORT MILLER, for the nine months ending June 30, 1916. L. C. Brasier and W. L. Sanders, Observers

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	102.95	103.1	104.75	105.05	106.95	105.85	106.85	106.3	105.4
2.....	103.0	103.15	104.7	105.4	106.8	105.75	107.75	105.8	105.0
3.....	103.25	103.0	104.7	105.2	106.55	105.55	107.8	105.8	104.8
4.....	103.05	103.1	104.55	104.9	106.2	105.35	108.0	105.8	105.15
5.....	103.15	103.55	104.75	104.35	105.95	105.25	107.6	105.5	105.05
6.....	103.15	103.85	103.75	104.55	105.9	105.2	107.0	105.55	104.85
7.....	103.65	103.9	104.25	104.75	105.65	105.0	106.75	105.55	104.6
8.....	103.8	103.6	104.05	105.0	105.1	104.95	106.35	105.35	104.6
9.....	103.65	103.45	103.55	105.4	104.85	104.9	106.2	105.5	104.55
10.....	103.5	103.2	103.35	104.95	104.85	105.0	105.95	104.5	104.3
11.....	103.35	103.0	103.45	104.65	104.75	104.7	105.5	104.7	104.65
12.....	103.1	102.8	104.05	104.35	104.7	105.05	105.55	104.6	105.0
13.....	103.05	103.3	103.65	104.55	105.4	105.1	105.8	105.45	104.6
14.....	103.0	104.0	103.7	104.3	105.25	104.8	105.8	105.2	104.85
15.....	103.1	103.3	103.15	104.35	104.8	104.7	106.1	104.6	104.6
16.....	103.05	103.65	103.0	104.65	104.45	104.6	106.25	104.3	104.6
17.....	103.45	103.75	103.1	104.6	104.4	104.65	106.05	106.4	104.65
18.....	103.6	104.45	103.45	104.45	104.7	104.55	106.15	108.0	105.3
19.....	103.35	104.35	104.8	104.2	104.7	105.1	106.5	108.85	105.45
20.....	103.2	104.6	104.75	104.05	105.0	105.15	106.15	108.35	105.55
21.....	103.4	105.45	104.55	104.0	105.05	104.85	106.3	107.75	105.5
22.....	103.5	105.6	104.5	104.0	104.55	104.65	106.15	107.15	105.4
23.....	103.4	105.2	104.35	104.95	104.3	104.65	106.6	106.75	105.0
24.....	103.5	105.0	104.4	105.05	104.55	104.7	107.05	106.4	104.9
25.....	103.3	104.7	104.3	105.1	104.6	104.6	107.35	106.6	105.05
26.....	103.05	104.75	105.25	105.2	105.2	104.8	107.8	106.1	105.1
27.....	102.9	104.45	105.4	105.45	106.4	105.05	107.2	105.8	104.65
28.....	103.05	104.5	105.45	106.1	106.2	104.95	106.95	105.8	104.75
29.....	102.85	104.5	105.35	106.9	105.8	105.55	106.8	105.35	104.6
30.....	103.2	104.85	105.1	106.9	.....	106.5	106.95	104.95	104.55
31.....	103.4	.....	105.1	106.85	.....	107.1	.....	105.8	.....

#### HUDSON RIVER ABOVE DAM AT NORTHUMBERLAND

This station, established April 11, 1904, is located on the downstream side of the highway bridge crossing the Hudson river about 1,700 feet above the dam at Northumberland. The gage is a standard chain gage, read twice daily — at about 7 A. M. and 5 P. M.— to tenths.

Daily elevation of water-surface (B. C. Datum) of HUDSON RIVER ABOVE DAM AT NORTHUMBERLAND, for the nine months ending June 30, 1916. E. Weils and G. W. Perkins, Observers

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	103.25	103.2	104.85	105.3	106.55	105.55	.....	.....	105.25
2.....	103.2	103.25	104.85	105.55	106.5	105.6	.....	.....	105.25
3.....	103.55	103.1	104.8	105.3	106.3	105.45	.....	.....	104.9
4.....	103.25	103.25	104.65	104.95	106.1	105.3	.....	.....	105.35
5.....	103.45	103.75	105.25	104.45	105.9	105.3	.....	.....	105.3
6.....	103.5	104.0	104.7	104.7	105.9	105.3	.....	.....	105.05
7.....	103.85	104.2	104.5	104.9	105.5	104.95	.....	.....	104.65
8.....	103.9	103.5	104.15	105.05	105.35	104.9	.....	104.85	104.75
9.....	104.05	103.45	104.5	105.1	104.95	105.0	.....	105.1	104.7
0.....	103.55	103.3	103.8	105.0	104.7	104.75	.....	104.55	104.5



Daily elevation of water-surface (B. C. Datum) of HUDSON RIVER ABOVE DAM AT NORTHUMBERLAND, for the nine months ending June 30, 1916 — *Continued*

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
11.....	103.55	103.25	103.4	104.4	104.6	104.6	.....	104.5	105.0
12.....	103.3	103.05	104.75	104.5	104.75	105.1	.....	104.55	105.1
13.....	103.25	103.5	104.5	104.15	105.0	104.9	.....	104.5	104.8
14.....	103.25	104.2	104.2	104.45	105.1	104.9	.....	105.25	104.75
15.....	103.5	103.6	102.4	104.6	104.7	104.8	.....	104.9	104.75
16.....	103.25	103.8	103.9	104.7	104.35	104.6	.....	104.5	104.75
17.....	103.75	103.75	104.1	104.55	104.75	104.25	.....	105.25	104.6
18.....	103.8	105.0	104.4	104.55	104.8	104.5	.....	107.4	105.6
19.....	103.45	104.75	105.15	104.05	104.8	104.85	.....	107.95	105.9
20.....	103.35	104.75	104.85	103.85	105.05	104.95	.....	107.45	105.6
21.....	103.6	105.5	104.6	103.75	105.1	104.85	.....	107.3	105.55
22.....	103.6	105.6	104.6	103.9	104.45	104.65	.....	105.85	105.45
23.....	103.65	105.3	104.6	104.85	104.4	104.6	.....	105.45	105.1
24.....	103.75	105.15	104.15	104.95	104.5	104.65	.....	105.15	105.0
25.....	103.5	104.8	105.15	105.15	104.55	105.0	.....	105.5	105.25
26.....	103.25	104.95	105.4	105.35	105.1	104.8	.....	105.0	105.05
27.....	103.05	104.75	105.45	105.45	105.1	105.1	.....	105.85	104.75
28.....	103.25	104.35	105.4	105.1	105.9	105.25	.....	105.9	104.65
29.....	102.5	104.2	105.4	105.5	105.65	105.9	.....	105.35	104.8
30.....	102.15	105.0	105.05	105.55	.....	105.2	.....	105.1	104.7
31.....	102.8	.....	105.15	105.5	.....	105.5	.....	105.75	.....

NOTE.—April 1 to May 7, inclusive, no observer.

#### HUDSON RIVER AT FREE BRIDGE, LIBERTY MILLS

This station, established October 23, 1905, is located on the highway bridge across the Hudson river commonly known as Free bridge, about three-fourths mile south, or downstream from the dam at Northumberland, about one-fourth mile above the mouth of Batten kill and about one and one-fourth miles above the village of Schuylerville. The gage is a standard chain gage located on the downstream side of the bridge and is read twice daily — at 6:30 A. M. and 5:30 P. M.— to tenths.

Daily elevation of water-surface (B. C. Datum) of HUDSON RIVER AT FREE BRIDGE, LIBERTY MILLS, for the nine months ending June 30, 1916. Wm. B. Dunstan, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	84.95	85.4	86.15	87.3	89.85	88.15	91.3	89.85	87.15
2.....	84.9	85.5	85.0	87.3	89.6	87.7	92.45	89.5	86.85
3.....	84.85	85.35	85.75	87.35	89.4	87.2	92.75	89.3	86.6
4.....	85.05	85.25	85.65	87.1	88.9	86.7	92.85	88.9	86.4
5.....	85.15	85.4	85.5	86.8	88.7	86.6	92.7	88.6	86.35
6.....	85.05	85.4	85.55	86.35	88.15	86.65	92.15	88.4	86.3
7.....	85.15	85.25	85.45	85.95	87.85	86.6	91.65	88.4	86.2
8.....	85.45	85.2	85.35	85.5	87.4	86.4	90.95	88.1	86.35
9.....	85.75	85.05	84.9	85.6	87.15	86.3	90.55	88.35	86.15
10.....	85.7	85.2	84.65	85.9	87.1	86.4	90.3	88.15	85.7

Daily elevation of water-surface (B. C. Datum) of HUDSON RIVER at FREE BRIDGE, LIBERTY MILLS, for the nine months ending June 30, 1916 — *Continued*

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
11.....	85.8	85.35	84.6	86.15	87.15	86.2	89.95	87.8	85.8
12.....	85.75	85.25	84.65	86.25	86.65	86.0	89.9	87.25	86.15
13.....	85.6	85.25	84.75	86.1	86.4	85.95	89.65	86.9	86.15
14.....	85.5	85.3	84.8	86.0	86.3	86.0	89.55	86.65	86.1
15.....	85.25	85.35	84.6	85.8	86.45	86.25	89.95	87.1	86.0
16.....	85.05	85.1	84.9	85.7	86.55	86.0	89.75	87.75	86.25
17.....	85.05	85.1	84.15	86.25	86.5	85.85	89.9	88.4	86.4
18.....	85.3	85.45	85.2	86.15	86.65	85.6	90.3	90.55	87.0
19.....	85.6	85.75	85.9	86.2	86.5	85.65	90.55	92.25	87.3
20.....	85.75	86.5	86.5	86.2	86.8	86.75	90.65	92.4	87.4
21.....	85.85	86.65	85.7	86.2	86.0	85.8	90.15	91.65	87.15
22.....	85.95	87.0	85.4	86.3	85.95	85.7	90.1	89.75	86.5
23.....	85.5	86.85	85.25	86.7	86.7	85.6	90.2	89.4	86.85
24.....	85.25	86.4	85.2	87.15	87.65	85.5	91.25	89.0	86.45
25.....	85.3	86.25	85.1	87.45	88.25	85.5	91.5	89.45	86.1
26.....	85.4	86.05	86.05	87.95	89.45	85.5	92.0	89.25	86.45
27.....	85.5	86.0	87.65	88.65	89.3	86.05	91.5	88.65	86.45
28.....	86.35	85.95	88.05	89.2	89.15	87.15	90.95	87.9	86.25
29.....	85.3	85.8	87.65	89.7	88.5	88.25	90.75	87.75	86.1
30.....	86.3	86.15	87.5	90.0	.....	90.2	90.6	87.7	86.1
31.....	85.25	.....	87.2	90.0	.....	91.4	.....	87.55	.....

#### HUDSON RIVER BELOW LOCK NO. 5, NORTHUMBERLAND

This station, established May 1, 1916, is located in the Hudson river at the lower end of Barge canal lock No. 5 and about 5,600 feet downstream from the Northumberland dam and about 1,900 feet downstream from the gage on Free bridge, Liberty Mills. The concrete gage in the lock wall is read twice daily — at 8 A. M. and 4 P. M. — to tenths.

Daily elevation of water-surface (B. C. Datum) of HUDSON RIVER BELOW LOCK No. 5 at NORTHUMBERLAND, for the nine months ending June 30, 1916. G. W. Perkins, Observer

DAY	May	June	DAY	May	June	DAY	May	June
1.....	89.5	86.25	11.....	87.0	84.9	21.....	89.9	86.4
2.....	88.95	86.0	12.....	86.25	85.25	22.....	89.25	86.3
3.....	88.6	85.65	13.....	86.8	85.25	23.....	88.7	85.9
4.....	88.7	85.45	14.....	85.9	85.25	24.....	88.05	85.65
5.....	88.25	85.75	15.....	85.95	85.2	25.....	88.65	85.4
6.....	88.15	85.5	16.....	85.25	85.15	26.....	87.6	85.6
7.....	87.8	85.25	17.....	87.55	85.2	27.....	87.2	85.25
8.....	87.55	85.25	18.....	90.25	85.55	28.....	86.65	85.55
9.....	88.05	84.7	19.....	91.5	86.3	29.....	86.25	85.35
10.....	86.7	84.85	20.....	91.3	86.55	30.....	86.05	85.15
						31.....	86.95	.....

NOTE.—Established May 1, 1916.

## HUDSON RIVER AT TOLL BRIDGE, SCHUYLerville

This station, established August 14, 1905, is located on the bridge across the Hudson river at Ferry street, Schuylerville, commonly known as Toll bridge. The gage is a standard chain gage located on the new truss across the Barge canal channel. The gage is read twice daily to tenths.

Daily elevation of water-surface (B. C. Datum) of HUDSON RIVER AT TOLL BRIDGE, SCHUYLerville, for the nine months ending June 30, 1916. Charlie Cheney, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	84.65	84.95	85.4	86.55	88.6	87.15	90.4	88.85	86.05
2.....	84.7	85.15	85.6	86.35	88.35	87.0	91.15	88.4	85.9
3.....	84.6	85.1	85.5	86.3	88.0	86.65	90.9	88.1	85.65
4.....	84.4	84.95	85.35	86.25	87.65	86.3	91.6	88.2	85.45
5.....	84.95	85.05	85.15	85.85	87.65	85.75	91.15	87.65	85.75
6.....	84.85	84.85	84.95	86.0	a	85.95	90.45	87.7	85.5
7.....	85.15	84.8	84.95	86.05	86.8	85.95	89.9	87.3	85.35
8.....	85.6	84.95	85.1	86.15	86.8	85.8	89.55	87.25	85.2
9.....	86.35	85.0	84.9	85.95	86.3	85.6	88.8	87.4	85.1
10.....	85.0	85.0	84.7	86.2	86.3	85.7	88.75	86.5	85.0
11.....	85.05	84.9	84.95	86.1	86.15	85.65	88.2	86.55	84.95
12.....	85.05	84.95	84.7	85.8	85.95	85.25	88.15	86.3	85.05
13.....	84.95	84.95	84.7	85.9	86.05	85.75	88.3	86.4	85.3
14.....	84.85	84.8	85.0	85.95	86.2	85.6	88.45	85.8	85.4
15.....	85.15	84.8	84.75	85.85	85.95	85.45	88.75	85.7	85.35
16.....	85.0	84.95	84.8	85.6	86.25	85.3	88.55	85.6	85.3
17.....	84.85	84.9	84.7	85.7	85.45	85.35	88.75	87.1	85.3
18.....	85.25	85.25	84.95	85.7	85.75	85.6	89.2	86.6	85.7
19.....	85.15	85.15	85.75	85.5	85.8	85.15	89.45	91.35	86.3
20.....	85.0	85.35	85.9	85.35	85.3	85.6	89.05	90.85	86.45
21.....	85.1	85.65	85.8	85.35	85.65	85.35	89.1	88.95	86.3
22.....	85.2	86.3	85.7	85.7	85.75	85.35	88.9	88.65	86.3
23.....	85.15	85.9	85.5	86.35	85.15	85.45	88.9	88.2	85.9
24.....	84.85	85.75	85.5	86.65	85.3	85.55	90.0	87.75	85.65
25.....	84.85	85.35	85.55	86.8	85.6	85.5	90.6	88.1	85.5
26.....	85.15	85.4	86.75	86.9	86.8	85.05	90.75	87.25	85.55
27.....	85.1	85.15	87.35	87.3	87.7	85.65	90.2	86.95	85.35
28.....	85.1	84.95	87.1	88.05	87.85	86.05	89.85	86.55	85.6
29.....	85.1	85.0	86.65	88.8	87.15	87.3	89.5	86.2	85.45
30.....	85.15	85.75	86.7	88.4	.....	88.95	89.3	86.25	85.35
31.....	84.9	.....	86.85	88.55	.....	90.5	.....	86.65	.....

a No record; gage broken.

## HUDSON RIVER AT HIGHWAY BRIDGE, STILLWATER

This station, established December 28, 1907, is located at the highway bridge across the Hudson river at Stillwater, about 800 feet above the dam. The gage is a vertical staff attached to the downstream end of the first pier from the right, or west bank of the river. The gage is read twice daily — at 8 A. M. and 4 P. M. — to tenths. Because of the inaccessibility of this gage certain readings are of questionable accuracy.

Daily elevation of water-surface (B. C. Datum) of HUDSON RIVER AT HIGHWAY BRIDGE, STILLWATER, for the nine months ending June 30, 1916. W. H. Handy and G. W. Perkins, Observers

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	84.2	84.75	85.0	85.2	86.4	85.15	.....	86.65	85.95
2.....	84.55	84.85	84.95	85.05	86.4	85.05	.....	86.55	85.9
3.....	84.25	84.6	84.9	85.05	86.25	85.05	.....	86.25	85.75
4.....	84.15	84.65	84.85	85.05	86.1	84.85	.....	86.15	85.55
5.....	84.45	84.6	84.75	85.0	85.95	84.6	.....	85.85	85.4
6.....	84.45	84.65	84.65	85.1	85.65	84.6	.....	85.75	85.35
7.....	84.75	84.5	84.55	85.15	85.55	84.6	.....	85.85	85.3
8.....	84.85	84.6	84.65	85.05	85.55	84.55	.....	85.85	85.15
9.....	84.75	84.65	84.55	84.95	85.15	84.65	.....	85.75	85.05
10.....	84.55	84.65	84.36	85.05	85.1	84.7	.....	85.35	85.0
11.....	84.7	84.55	84.4	85.1	84.95	84.75	.....	85.45	84.95
12.....	84.5	84.5	84.25	84.95	85.05	84.85	.....	85.15	84.95
13.....	84.55	84.6	84.15	85.05	84.6	84.8	.....	85.35	84.85
14.....	84.55	84.5	84.15	85.1	84.55	84.85	.....	84.95	84.9
15.....	84.85	84.5	84.45	84.9	84.55	84.9	.....	85.15	84.85
16.....	84.6	84.5	84.55	84.85	84.5	84.95	.....	84.55	85.05
17.....	84.45	84.7	84.65	84.8	84.55	84.9	.....	84.95	85.15
18.....	84.55	84.75	84.65	84.65	84.8	84.85	.....	86.45	85.15
19.....	84.65	84.75	84.9	84.75	84.95	84.75	.....	87.75	85.3
20.....	84.75	84.9	85.1	84.65	84.85	84.75	.....	87.35	85.5
21.....	84.65	85.1	85.05	84.55	84.9	84.65	.....	86.65	85.55
22.....	84.75	85.45	85.05	84.75	84.85	84.65	.....	86.5	85.55
23.....	84.75	85.25	84.95	85.2	84.65	84.6	.....	86.45	85.45
24.....	84.65	85.15	84.9	85.3	84.55	84.6	.....	86.15	85.3
25.....	84.65	84.9	84.95	85.4	84.9	84.65	.....	86.5	85.15
26.....	84.8	84.95	85.45	85.55	85.25	84.7	.....	86.15	85.05
27.....	84.75	84.75	85.9	85.7	85.8	85.0	.....	86.15	84.95
28.....	84.85	84.5	85.75	86.0	85.85	85.05	.....	86.35	85.15
29.....	84.75	84.6	85.65	86.55	85.5	85.3	.....	86.1	85.0
30.....	84.85	85.05	85.6	86.3	.....	86.25	.....	85.95	84.9
31.....	84.7	.....	85.5	86.5	.....	87.0	.....	86.05	.....

8 TE.—During April this gage was not read. May 1-21, inclusive, gage was read once daily at A. M.

## HUDSON RIVER BELOW DAM AT STILLWATER

This station, established July 15, 1909, is located on the west bank of the Hudson river below the dam at Stillwater. The gage is a vertical staff at the tail-race of the A. T. Pack grist-mill and is read twice daily — at 8 A. M. and 4:30 to 5 P. M. — to tenths.

For water-surface at upper end of canalized pool below Stillwater, see Hudson river below lock No. 4, Stillwater.

Daily elevation of water-surface (B. C. Datum) of HUDSON RIVER BELOW DAM AT STILLWATER, for the nine months ending June 30, 1916. W. H. Handy, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	76.25	76.05	76.6	77.25	78.8	77.3	79.65	78.9	77.15
2.....	76.1	76.1	76.6	77.25	78.7	77.45	80.1	78.55	77.05
3.....	76.0	76.1	76.55	76.95	78.35	77.2	80.15	78.45	76.85
4.....	76.1	76.1	76.6	77.3	78.2	77.2	80.2	77.5	76.65
5.....	76.25	76.25	76.15	76.75	78.15	76.7	80.0	78.3	77.4
6.....	76.35	76.0	76.2	77.5	78.2	77.1	79.65	78.25	76.75
7.....	76.4	75.9	76.25	76.95	77.75	76.4	79.45	77.95	76.6
8.....	76.8	76.05	76.5	77.35	77.5	76.4	79.2	77.85	76.5
9.....	76.55	75.95	76.15	77.1	77.05	76.6	78.9	78.1	76.45
10.....	76.3	75.95	75.9	76.8	77.25	76.55	78.8	77.35	76.35
11.....	76.35	75.85	76.05	76.85	77.0	76.7	78.55	78.1	76.3
12.....	76.5	75.65	75.9	76.95	76.75	76.55	78.3	77.15	76.75
13.....	76.3	75.9	76.35	76.8	76.25	76.75	78.55	77.5	76.65
14.....	76.3	75.7	76.35	77.0	76.95	76.6	78.65	77.05	76.6
15.....	76.45	75.95	76.4	77.25	76.45	76.55	78.9	77.4	76.65
16.....	76.35	76.2	76.45	76.9	76.5	76.6	78.7	76.55	76.55
17.....	76.25	76.2	76.45	77.1	76.15	76.5	78.8	78.05	76.55
18.....	76.55	76.06	76.25	77.05	76.55	76.55	79.05	79.2	76.85
19.....	76.45	76.15	76.6	77.2	77.2	76.45	79.15	80.0	77.45
20.....	76.3	76.4	76.85	77.1	76.3	76.65	78.95	79.8	77.4
21.....	76.45	76.65	76.75	76.55	76.65	76.6	78.95	79.1	77.35
22.....	76.5	77.45	76.75	76.6	76.5	76.5	78.85	78.9	77.35
23.....	76.55	76.3	76.6	77.35	76.45	76.5	78.95	78.5	77.0
24.....	76.25	76.85	76.5	77.45	76.45	76.5	79.35	78.05	76.9
25.....	76.15	76.6	76.5	77.4	76.5	76.5	79.7	78.35	76.7
26.....	76.25	76.6	77.25	77.5	77.45	76.35	79.8	77.95	76.9
27.....	76.35	76.4	77.9	77.55	78.0	76.75	79.55	77.75	76.7
28.....	76.25	76.05	77.75	78.3	78.05	76.9	79.4	77.3	76.9
29.....	76.2	76.2	77.65	78.75	77.7	77.55	79.2	77.25	76.75
30.....	76.3	76.9	77.4	78.65	.....	78.5	79.1	77.0	76.55
31.....	76.1	.....	77.35	78.55	.....	79.9	.....	76.6	.....

**HUDSON RIVER ABOVE LOCK NO. 4, STILLWATER**

This station, established April 1, 1916, is located at the upper end of Barge canal lock No. 4 at Stillwater. Above the lock a land-line about 2,400 feet long joins the Hudson river about 1,400 feet above the dam. The water-surface indicated approximates that at this junction. The upper concrete staff gage in the lock structure is read twice daily — at 8 A. M. and 4 P. M.— to tenths.

Daily elevation of water-surface (B. C. Datum) of HUDSON RIVER ABOVE LOCK NO. 4 AT STILLWATER, for the nine months ending June 30, 1916. G. W. Perkins, Observer

DAY	April	May	June	DAY	April	May	June	DAY	April	May	June
1...	87.15	83.55	85.3	11...	84.45	85.4	84.85	21...	82.25	87.15	85.35
2...	87.5	82.5	85.0	12...	83.6	85.3	84.7	22...	83.35	86.7	85.35
3...	87.8	81.65	84.95	13...	83.4	85.5	84.65	23...	83.6	86.35	85.25
4...	87.6	82.75	84.65	14...	84.45	85.2	84.7	24...	84.4	85.85	84.9
5...	87.5	83.05	84.95	15...	85.55	85.0	84.7	25...	85.25	86.55	84.8
6...	86.85	83.15	84.7	16...	84.1	84.8	84.8	26...	85.6	86.0	84.95
7...	86.45	84.35	84.75	17...	83.35	85.85	84.6	27...	85.65	85.75	84.85
8...	86.0	85.65	84.75	18...	84.0	87.05	84.8	28...	84.7	85.7	84.9
9...	85.7	86.1	84.8	19...	83.05	87.85	85.4	29...	84.5	85.3	84.9
10...	85.25	85.4	84.65	20...	80.95	87.7	85.4	30...	84.1	85.0	84.75
								31...	.....	85.85	.....

**HUDSON RIVER BELOW LOCK NO. 4, STILLWATER**

This station, established April 1, 1916, is located at the lower end of Barge canal lock No. 4 at Stillwater and indicates the surface at the upper end of the canalized pool in the Hudson river below Stillwater. The lower concrete staff gage in the lock structure is read twice daily — at 8 A. M. and 4 P. M.— to tenths.

Daily elevation of water-surface (B. C. Datum) of HUDSON RIVER BELOW LOCK NO. 4 AT STILLWATER, for the nine months ending June 30, 1916. G. W. Perkins, Observer

DAY	April	May	June	DAY	April	May	June	DAY	April	May	June
1...	72.2	71.1	69.35	11...	71.0	69.5	68.65	21...	71.35	71.55	71.55
2...	73.75	70.85	69.1	12...	70.9	69.3	68.9	22...	71.05	71.0	71.45
3...	72.85	70.6	68.95	13...	70.85	69.45	68.5	23...	71.9	70.6	71.2
4...	72.85	70.5	68.9	14...	70.95	69.25	68.6	24...	71.9	70.2	70.9
5...	72.55	70.45	69.0	15...	71.6	69.1	68.9	25...	72.25	70.7	70.75
6...	72.3	70.35	68.7	16...	71.65	68.5	69.5	26...	72.25	70.05	70.85
7...	71.95	70.5	68.5	17...	71.4	69.95	70.0	27...	71.85	69.85	70.45
8...	71.55	70.0	68.2	18...	71.7	71.25	70.85	28...	71.8	69.65	70.7
9...	71.5	70.35	68.2	19...	71.65	72.3	71.5	29...	71.5	69.45	70.6
10...	71.3	69.75	67.7	20...	71.35	72.05	71.55	30...	71.6	69.0	70.5
								31...	.....	69.65	.....

**HUDSON RIVER AT WEST VIRGINIA PULP AND PAPER CO.'S MILL  
(UPPER DAM), MECHANICVILLE**

**Location.**— At the Duncan dam of the West Virginia Pulp & Paper Co., in the village of Mechanicville, Saratoga county, about 3,700 feet above the mouth of Anthony kill, one and one-fourth miles below the mouth of Hoosic river, and about 19 miles above the mouth of Mohawk river at Cohoes.

**Records available.**— 1888 to June 30, 1916.

**Drainage area.**— 4,500 square miles.

**Gage.**— Recording gage installed at the dam in the summer of 1910 for the purpose of obtaining a more accurate register of the daily flow over the crest of the dam; previous to 1910, two gage readings daily on the crest of the dam.

**Discharge measurements.**— Determinations of discharge for periods previous to the summer of 1910 computed by using two daily gage readings on the crest of the dam and continuous record of the run of the wheels in the adjoining paper-mill. In 1904 the dam was raised and a concrete crest and apron were added, so that it now has a rounded or ogee section. A discharge curve has been calculated by means of coefficients derived from the United States Geological Survey experiments on dams of ogee section. The construction of Barge canal lock No. 3 on the east side of the river has shortened the crest of the dam about 94 feet. This lock was opened to canal traffic on May 15, 1916, and since that date water used for canal purposes has been included in the estimated discharge as published herein.

**Extremes of discharge.**— 1888-1916: Maximum discharge recorded, 120,000 second-feet at 6 A. M., March 28, 1913.\* The plant is occasionally shut down and the flow of the river is stored in the pond so that the discharge below the station becomes practically zero.

**Accuracy.**— Records at this section are very carefully made and may be considered good for this type of station.

**Coöperation.**— Records of flow over the dam and through the wheels are computed and furnished by Mr. R. P. Bloss, Engineer of the West Virginia Pulp and Paper Company, to which are added estimated amounts of water used for canal purposes.

\*The highest known flood prior to this time occurred April, 1889. Calculated discharge, 70,000 second-feet. See Water-Supply Paper 65, page 51, and report of U. S. Board of Engineers on Deep Waterways, Part I, pages 377-80.

Daily discharge, in second-feet, of HUDSON RIVER AT WEST VIRGINIA PULP AND PAPER CO.'S MILL (UPPER DAM), MECHANICVILLE, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	3,833	3,655	5,577	7,410	21,614	9,720	32,839	18,189	7,514
2.....	3,279	4,507	5,536	6,919	18,378	9,360	35,845	16,151	6,953
3.....	2,000	3,357	5,247	7,465	14,964	10,173	31,820	15,570	6,615
4.....	3,230	3,572	4,746	6,918	17,353	8,571	31,626	14,948	7,105
5.....	3,231	4,243	3,963	6,148	14,174	8,316	28,624	14,230	7,299
6.....	4,192	3,505	3,937	7,600	13,442	8,751	25,761	12,413	6,010
7.....	5,363	2,223	3,760	7,517	14,964	7,892	24,349	11,920	5,447
8.....	5,158	3,194	3,595	6,277	10,835	7,822	21,869	11,514	5,659
9.....	5,156	3,420	2,919	4,761	9,044	7,263	19,780	12,494	4,919
10.....	4,259	3,686	2,714	6,865	9,746	6,891	18,134	11,434	4,445
11.....	4,341	3,232	2,564	6,248	7,943	5,971	16,409	9,441	4,858
12.....	4,481	2,513	2,290	6,768	6,420	6,515	16,953	8,025	5,929
13.....	4,266	2,852	3,009	6,810	6,250	7,149	17,569	7,240	5,578
14.....	4,069	1,573	2,761	6,347	6,517	6,482	19,968	6,701	5,839
15.....	4,101	2,786	2,954	5,955	6,454	6,238	20,777	6,444	5,496
16.....	4,147	2,699	2,647	4,534	6,525	6,248	19,640	6,537	5,645
17.....	6,484	3,110	2,464	6,107	6,733	4,806	19,938	14,806	5,540
18.....	4,540	4,554	6,945	5,679	7,005	6,085	22,223	24,399	9,285
19.....	4,644	5,075	11,741	5,209	6,435	5,874	20,678	26,989	11,092
20.....	4,753	4,978	10,201	4,973	5,329	7,096	19,028	19,658	10,992
21.....	5,025	7,181	7,501	5,287	6,471	7,164	18,987	18,602	10,608
22.....	4,502	8,209	6,827	8,622	5,292	6,605	19,781	17,864	9,869
23.....	5,347	7,826	5,871	13,405	5,862	5,677	21,526	14,593	8,684
24.....	4,243	6,893	8,778	11,395	6,505	5,500	25,230	14,114	6,878
25.....	4,111	4,956	6,746	11,964	7,407	6,355	25,625	14,283	6,895
26.....	4,138	4,831	22,719	12,804	13,024	5,774	25,639	11,588	6,893
27.....	3,843	4,638	18,341	19,762	14,361	6,937	23,864	10,332	6,721
28.....	3,984	2,426	13,030	25,693	13,067	9,258	23,021	8,289	7,007
29.....	3,843	4,303	8,859	25,628	11,010	16,442	20,447	7,838	6,207
30.....	5,140	6,072	9,552	24,315	.....	26,389	19,549	8,301	5,816
31.....	3,512	.....	7,623	24,899	.....	32,955	.....	9,264	.....
Mean....	4,297	4,202	6,626	10,009	10,109	8,912	22,916	13,038	6,924

NOTE.—Water used for canal purposes is included.

Monthly discharge of HUDSON RIVER AT WEST VIRGINIA PULP AND PAPER CO.'S MILL (UPPER DAM), MECHANICVILLE, for the nine months ending June 30, 1916  
[Drainage area, 4,500 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF Depth in inches on drainage area
	Maximum	Minimum	Mean	Per square mile	
October.....	5,363	2,000	4,297	0.955	1.10
November.....	8,209	1,573	4,202	0.904	1.01
December.....	22,719	2,290	6,626	1.472	1.70
January.....	25,693	4,534	10,009	2.222	2.56
February.....	21,614	6,250	10,109	2.247	2.42
March.....	32,955	4,806	8,912	1.980	2.28
April.....	35,845	16,409	22,916	5.092	5.68
May.....	26,989	6,444	13,038	2.897	3.34
June.....	11,062	4,445	6,924	1.539	1.72



**HUDSON RIVER AT TOLL BRIDGE, MECHANICVILLE**

This station, established August 16, 1905, is located at the highway bridge crossing the Hudson river at Mechanicville, commonly known as Toll bridge, about two miles above the lower dam and about three-quarters of a mile below the upper dam. The gage is a standard chain gage located on the upstream side of the first span from the west end of the bridge. Readings are taken twice daily — at 8 A. M. and between 4:30 and 5:30 P. M. — to half-tenths.

Daily elevation of water-surface (B. C. Datum) of HUDSON RIVER AT TOLL BRIDGE, MECHANICVILLE, for the nine months ending June 30, 1916. Byron Stedman, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	48.02	48.25	48.98	50.05	52.32	50.42	54.05	52.42	49.82
2.....	48.10	48.15	48.98	49.75	52.08	50.32	55.02	51.55	49.50
3.....	47.65	48.05	48.88	49.67	51.45	50.30	54.35	51.22	49.32
4.....	48.05	48.08	48.78	50.28	51.05	50.02	54.22	51.28	48.98
5.....	48.32	48.10	48.28	49.50	50.55	49.58	53.75	50.98	49.68
6.....	48.00	48.18	48.25	49.90	50.18	49.80	53.30	50.80	49.30
7.....	48.70	47.65	48.25	50.65	50.20	49.72	53.00	50.52	49.19
8.....	49.45	48.28	48.20	50.12	49.85	49.62	52.62	50.48	48.95
9.....	48.95	48.10	47.68	49.42	49.70	49.60	52.10	50.80	49.05
10.....	48.38	48.00	48.22	49.80	50.00	49.35	51.88	49.95	48.68
11.....	48.60	48.00	48.18	49.80	49.92	49.25	51.50	50.00	48.58
12.....	48.25	48.08	47.58	49.60	50.35	48.68	51.45	49.80	49.28
13.....	48.15	48.20	48.15	49.62	50.05	49.48	51.70	50.10	49.10
14.....	48.12	47.92	48.15	49.75	50.20	49.28	51.85	49.20	49.15
15.....	48.45	48.30	47.92	49.30	49.95	49.12	52.45	49.55	49.25
16.....	48.40	48.08	48.08	48.78	49.65	49.35	52.05	49.10	49.10
17.....	47.75	48.10	47.95	<del>49.60</del>	49.85	49.10	52.20	50.15	49.02
18.....	48.70	48.52	47.80	49.15	49.65	49.15	52.58	52.25	49.12
19.....	48.62	48.20	51.08	49.15	49.40	48.55	52.00	53.38	50.10
20.....	48.28	48.10	50.45	48.60	48.70	49.42	52.22	52.98	50.12
21.....	48.20	48.55	49.95	48.80	49.20	49.30	52.20	52.00	50.02
22.....	48.45	49.85	49.62	49.15	48.95	49.20	52.12	51.80	49.90
23.....	48.65	49.45	49.28	51.47	48.78	49.05	52.42	51.20	49.68
24.....	47.65	<del>49.35</del>	49.40	50.85	48.90	48.80	53.15	50.62	49.35
25.....	48.22	48.72	49.08	51.25	49.22	49.00	52.80	51.25	48.95
26.....	48.05	48.68	52.40	50.00	50.28	48.70	53.35	50.35	49.35
27.....	48.30	48.60	52.12	51.25	51.70	49.78	52.95	50.12	49.05
28.....	48.40	47.78	51.45	52.20	51.22	49.80	52.70	49.72	49.35
29.....	48.15	48.48	50.85	52.45	50.38	50.70	52.45	49.70	49.20
30.....	48.20	49.20	50.40	51.80	.....	52.22	52.18	49.42	49.02
31.....	47.82	.....	50.25	51.80	.....	53.80	.....	50.30	.....

**HUDSON RIVER AT DAM OF ADIRONDACK ELECTRIC POWER CORPORATION (LOWER DAM), MECHANICVILLE**

**Location.**—At the dam of the Adirondack Electric Power Corporation across the Hudson river which is the lower dam in the village of Mechanicville about  $2\frac{1}{2}$  miles below the upper, or Duncan dam of the West Virginia Pulp and Paper Company.

**Records available.**—Water-surface elevations, August 18, 1905, to June 30, 1916. Discharge, October 1, 1897, to June 30, 1916.

**Drainage area.**—4,570 square miles.

**Gages.**—The gage above the dam is a vertical staff attached to a crib upstream from the power-house. Lower gage is a reference point on the hand-rail of downstream truss of highway bridge to Barge canal lock about 150 yards below power-house. This gage indicates elevation in tail-race. Both gages are read twice daily — at 8 A. M. and 5 P. M. — to tenths.

**Discharge computations.**—Discharge is determined by the flow over the crest of the dam and the water passed through the wheels of the power company.

**Extremes of discharge.**—Current period: Maximum daily mean recorded, April 2, as 44,166 second-feet. Minimum daily mean recorded, October 3, as 2,119 second-feet.

1897–1916: Maximum water-surface above dam recorded, Elev. 58.5 on March 28, 1913, at 8 A. M.; discharge estimated by Department of State Engineer as about 94,000 second-feet. Minimum daily mean recorded, on August 29, 1909, as 24 second-feet.

**Coöperation.**—Records of flow over the dam and through the wheels are computed and furnished by the Adirondack Electric Power Corporation through Mr. George E. Fifield, Local Superintendent, to which are added beginning May 15, 1916, on which date the lock was opened to canal traffic, estimated amounts of water used for canal purposes.

**Emendation.**— Certain clerical errors have occurred in previous reports. These have been corrected, also estimated discharges have been supplied where records were lacking and values for the year added and the entire discharge record (1897 to 1916) as corrected is published herein.

In these tables the following is a list of the items corrected:

- 1897 — DDT: Mean, Oct. to Dec., incl.  
 1898 — DDT: July 9 to 14 incl., Aug. 25 to 31 incl.; Mean, all except May and Oct.  
           MDT: Max., Aug.; Mean, SM, DI, July, Aug., and Sept.  
 1899 — DDT: June 11, Dec. 10; Mean, April, June and Sept. to Dec., incl.  
           MDT: Mean, Dec.; SM, Dec.; DI, Mar., May to Sept., incl., and Dec.  
 1900 — DDT: Mean, all except Feb. and May.  
 1901 — DDT: Mean, Feb. to Sept., incl., and Dec.  
           MDT: Min., June and Sept.; Mean, June, Sept. and Dec.; DI, June.  
 1902 — DDT: Mean, Jan. to April, incl., and Aug. to Nov., incl.  
           MDT: Min., Sept.; DI, Nov.  
 1903 — DDT: Mean, all except May and Nov.  
           MDT: Max., Nov.; DI, Oct.  
 1904 — DDT: Mean, all except Jan. and July.  
           MDT: Min., June; SM, Feb.; DI, April and Oct.  
 1905 — DDT: Mean, all except Mar., June and Nov.  
           MDT: Mean, Oct.  
 1906 — DDT: Mean, all except Sept.  
           MDT: Min., June; Mean, Feb., April, June to Aug., incl.; SM, April and July; DI, Mar., April and July.  
 1907 — DDT: Sept. 11, 13, 16, 20 and 23, Oct. 24, Nov. 4 and 10, Dec. 5, 11, 19 and 25; Mean, Feb., Sept., Nov. and Dec.  
           MDT: Max., Dec.; Min., Dec.; Mean, Feb., Sept., Nov. and Dec.; SM, April, Sept., Nov. and Dec.; DI, April, May, Sept., Nov. and Dec.  
 1908 — DDT: Jan. 27 and 29, Feb. 13 and 27, April 14 and 23, June 20, July 14, 17 and 30, Aug. 21, Oct. 14, Dec. 19; Dec. 1 to 5, incl., not previously published are included herein; Means, Jan., Feb., April, June, July, Aug. and Dec.  
           MDT: Max., July and Dec.; Min., Jan.; Means, Jan., Feb., April, June, July, Aug. and Dec.; SM, all except Feb., April, Sept., Oct. and Nov.; DI, all except Feb., Aug., Sept., Oct. and Nov.  
 1909 — DDT: Jan. 11, Feb. 1, Mar. 9 and 13, June 5 and 30; Means, Jan., Mar., June, Aug. and Dec.  
           MDT: Min., June; Means, Jan., Mar., June, Aug. and Dec.; SM, Jan. Mar., June, Aug. and Dec.; DI, April, May, Aug. and Dec.  
 1910 — DDT: Aug. 31; Mean, Aug.  
           MDT: Mean, Aug.; SM, June and Aug.; DI, Mar. April and June.  
 1911 — DDT: Feb. 1, 16, 18 and 28, Mar. 6, April 29, May 1 and 6, June 11, July 1, Aug. 9, Sept. 25, Oct. 12, Nov. 23; Means, all except June, Nov. and Dec.  
           MDT: Max., July; Min., Jan.; Means, all except June, Nov. and Dec.; DI, May.  
 1912 — MDT: Min., Oct.  
 1913 — DDT: Jan. 7 and 29; Means, Jan., Feb. and Mar.  
           MDT: Mean, Jan. Feb. and Mar.; SM, Jan.; DI, Jan. and Apr.  
 1914 — ——— No change.  
 1915 — DDT: Mean, July.  
           MDT: Min., May and Sept.; Mean, July; DI, Jan.; The year.

**NOTE.**— DDT = In daily discharge table. MDT = In monthly discharge table. Mean = Mean discharge in second-feet. Max. = Maximum discharge in second-feet. Min. = Minimum discharge in second-feet. SM = Discharge in second-feet per square mile. DI = Depth in inches in drainage area.

Daily elevation of water-surface (B. C. Datum) of HUDSON RIVER ABOVE DAM AT ADIRONDACK ELECTRIC POWER CORPORATION (LOWER DAM), MECHANICVILLE, for the nine months ending June 30, 1916. Geo. E. Fifield, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	47.7	47.9	48.55	49.25	50.9	49.15	52.25	50.8	49.5
2.....	47.95	47.85	48.55	48.95	50.65	49.35	53.25	50.6	49.15
3.....	47.55	47.8	48.5	49.1	49.95	49.1	52.75	50.35	49.0
4.....	47.85	47.85	48.45	49.3	50.1	49.05	52.6	50.4	48.85
5.....	47.95	47.85	47.9	49.0	50.2	48.55	52.3	50.1	49.35
6.....	47.6	47.85	48.05	49.3	50.0	48.85	51.4	50.1	49.1
7.....	48.3	47.5	47.9	49.3	49.95	49.05	50.6	49.9	48.8
8.....	48.65	47.85	47.85	49.35	48.95	48.9	50.3	49.8	48.65
9.....	48.55	47.85	47.45	48.75	49.3	48.8	50.9	49.5	48.75
10.....	48.05	47.9	47.9	49.1	49.55	48.5	50.85	49.1	48.45
11.....	48.25	47.8	47.85	49.1	49.5	48.35	50.4	49.35	48.45
12.....	47.8	47.75	47.55	48.95	49.3	48.05	50.35	49.3	49.0
13.....	47.75	48.0	47.95	48.95	48.8	48.6	50.6	49.55	48.8
14.....	47.8	47.45	47.9	49.05	48.55	48.4	50.8	48.85	48.8
15.....	47.95	47.95	47.75	48.45	48.6	48.2	51.35	49.1	48.8
16.....	47.9	47.9	47.85	47.9	48.55	48.3	50.95	48.65	48.75
17.....	47.4	47.9	47.8	49.1	48.35	48.15	51.1	49.55	48.75
18.....	48.35	48.15	47.4	48.55	48.55	48.2	51.4	50.15	48.9
19.....	48.2	47.85	50.25	48.05	48.55	48.6	51.45	51.2	49.2
20.....	47.85	48.05	49.8	48.1	47.7	48.3	51.2	51.15	49.6
21.....	47.7	48.1	49.35	48.25	48.4	48.15	51.2	50.65	49.45
22.....	48.1	49.35	49.1	48.65	48.25	47.95	51.1	50.6	49.35
23.....	48.3	49.0	48.85	50.4	48.05	48.0	51.2	50.25	49.25
24.....	47.35	48.85	48.4	49.8	48.1	47.8	51.7	49.85	48.85
25.....	47.9	48.3	48.6	49.9	48.45	47.95	52.1	50.4	48.65
26.....	47.8	48.15	51.15	50.0	49.35	47.85	52.1	49.65	48.9
27.....	48.0	48.25	50.7	50.35	50.15	48.8	51.75	49.55	48.65
28.....	48.05	47.45	50.55	51.3	49.9	49.0	51.65	49.0	48.95
29.....	47.8	47.95	50.1	51.4	49.05	49.75	51.35	49.2	48.8
30.....	47.9	48.8	49.75	50.35	.....	50.5	51.1	49.0	48.6
31.....	47.65	.....	49.6	50.5	.....	52.15	.....	49.8	.....

Daily elevation of water-surface (B. C. Datum) of HUDSON RIVER BELOW DAM OF ADIRONDACK ELECTRIC POWER CORPORATION (LOWER DAM), MECHANICVILLE, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	31.6	31.45	31.65	32.05	31.65	30.25	34.5	32.2	32.4
2.....	31.45	31.4	31.65	31.95	32.25	30.25	34.75	31.85	32.1
3.....	31.05	31.25	31.55	31.95	31.7	30.2	35.05	31.55	31.95
4.....	31.5	31.15	31.55	32.25	31.15	30.05	34.6	31.7	31.5
5.....	31.8	31.1	31.1	32.25	30.75	29.9	34.6	31.5	32.05
6.....	32.0	31.1	31.45	32.4	30.45	30.15	34.0	31.15	31.85
7.....	31.75	30.7	31.15	32.35	30.45	30.25	34.15	31.4	31.65
8.....	31.95	31.15	31.5	32.35	30.05	30.15	32.5	33.25	31.5
9.....	31.65	31.16	31.05	32.05	30.45	30.0	32.05	33.4	31.65
10.....	31.6	31.1	30.8	32.1	29.7	29.95	31.85	33.1	31.3
11.....	31.7	30.95	30.7	32.15	30.1	30.0	32.6	32.85	31.1
12.....	31.8	30.9	30.0	32.05	29.85	29.9	32.5	32.45	31.7
13.....	31.6	30.85	30.7	32.1	29.8	30.0	32.05	32.25	31.7
14.....	31.5	30.6	30.55	31.7	30.05	30.05	32.05	31.8	31.55
15.....	31.85	30.9	30.8	31.75	30.15	29.95	33.95	32.25	31.5

Daily elevation of water-surface (B. C. Datum) of HUDSON RIVER BELOW DAM OF ADIRONDACK ELECTRIC POWER CORPORATION (LOWER DAM), MECHANICVILLE, for the nine months ending June 30, 1916—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
16.....	31.6	31.05	30.65	31.6	30.1	30.0	34.65	31.7	31.65
17.....	29.75	31.0	30.7	31.6	30.2	29.95	35.0	32.9	31.5
18.....	31.0	31.25	30.75	31.65	30.1	29.85	35.0	34.55	31.65
19.....	31.65	31.35	33.3	31.5	29.9	29.85	35.15	36.05	32.4
20.....	31.5	31.4	32.75	31.4	29.9	29.9	34.95	35.75	32.5
21.....	31.55	31.7	32.3	31.35	30.0	30.0	34.9	34.8	32.45
22.....	31.15	31.05	32.05	31.65	30.05	30.0	34.75	34.6	32.35
23.....	31.55	31.65	31.7	33.9	30.0	29.9	34.9	34.55	32.25
24.....	31.3	31.95	31.85	32.65	29.9	29.8	35.6	33.75	31.9
25.....	31.35	31.65	31.95	31.25	29.85	29.85	36.05	34.05	31.85
26.....	31.35	31.5	33.9	30.45	30.05	29.65	36.05	33.35	31.75
27.....	31.3	31.45	33.9	30.75	30.8	30.0	35.6	33.1	31.55
28.....	31.2	30.9	33.8	31.35	30.85	29.95	34.4	32.75	31.9
29.....	31.45	31.3	33.35	31.9	30.35	30.65	32.8	32.35	31.75
30.....	31.7	31.75	32.85	31.85	.....	32.35	32.6	32.05	31.55
31.....	31.2	.....	32.05	31.85	.....	34.3	.....	32.8	.....

Daily discharge, in second-feet, of HUDSON RIVER AT DAM OF ADIRONDACK ELECTRIC POWER CORPORATION (LOWER DAM), MECHANICVILLE

1897	Oct.	Nov.	Dec.	1897	Oct.	Nov.	Dec.	1897	Oct.	Nov.	Dec.
1....	2,290	2,150	17,121	11.....	2,150	9,224	12,927	21....	2,370	8,629	12,207
2....	2,245	3,475	15,655	12.....	2,150	11,254	13,000	22....	2,346	9,351	8,486
3....	3,065	10,530	13,539	13.....	2,450	12,243	17,150	23....	2,150	8,182	6,900
4....	2,290	10,149	14,460	14.....	3,000	13,788	15,559	24....	3,070	7,451	4,819
5....	2,170	8,817	13,509	15.....	3,135	10,794	31,178	25....	2,290	6,368	2,786
6....	2,150	7,314	20,531	16....	3,665	10,060	35,706	26....	2,150	7,365	2,293
7....	2,150	5,915	16,404	17....	4,110	13,300	32,515	27....	2,150	15,402	4,122
8....	2,150	5,752	15,435	18....	2,664	11,800	29,702	28....	2,150	15,848	7,047
9....	2,150	5,752	14,437	19....	2,900	11,620	23,114	29....	2,150	19,456	6,467
10....	3,180	9,266	13,462	20....	2,660	10,650	15,379	30....	2,150	16,984	6,467
								31....	3,133	.....	6,467
								Mean.	2,523	9,962	14,479

Monthly discharge, in second-feet, of HUDSON RIVER AT DAM OF ADIRONDACK ELECTRIC POWER CORPORATION (LOWER DAM), MECHANICVILLE  
[Drainage area, 4,570 square miles]

1897	DISCHARGE IN SECOND-FEET				RUN-OFF Depth in inches on drainage area
	Maximum	Minimum	Mean	Per square mile	
October.....	4,110	2,150	2,523	0.552	0.64
November.....	19,456	2,150	9,962	2.18	2.43
December.....	35,706	*2,293	14,479	3.17	3.66

\* Sunday.

NOTE.—Above tables supersede those published in Report of State Engineer for 1910, pages 620 and 627. For list of changes see page 258.

## Daily discharge, in second-feet, of HUDSON RIVER AT DAM OF ADIRONDACK ELECTRIC POWER CORPORATION (LOWER DAM), MEGANVILLE

1898	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	5,512	5,335	5,118	19,300	13,500	10,128	2,075	2,917	4,385	3,424	8,953	7,847
2.....	4,689	5,095	5,004	18,925	12,310	9,420	3,863	3,117	3,806	3,024	9,227	6,890
3.....	5,035	5,272	5,021	16,000	10,418	7,540	3,130	6,188	4,779	2,197	8,232	5,943
4.....	5,186	4,151	4,986	14,718	11,527	6,740	2,077	5,658	4,477	1,907	8,254	5,988
5.....	5,806	4,353	5,021	12,718	11,307	5,200	3,728	5,809	5,414	6,285	6,404	5,761
6.....	5,485	6,475	3,938	11,416	12,014	5,784	2,756	5,809	4,509	24,538	7,121	7,008
7.....	6,626	5,203	5,021	10,600	11,824	5,930	2,511	3,800	4,063	11,797	8,552	8,115
8.....	7,256	5,000	5,118	9,438	9,500	4,730	2,371	5,019	6,551	9,366	6,780	6,554
9.....	5,890	4,826	6,868	6,728	10,014	4,530	.....	4,552	4,563	10,304	7,557	5,087
10.....	6,168	4,826	7,103	7,400	9,452	4,230	.....	3,982	4,257	8,626	5,921	5,481
11.....	5,951	6,325	9,260	8,535	8,346	3,795	.....	3,899	3,156	7,532	21,456	4,124
12.....	5,298	10,022	16,497	8,235	8,950	3,100	.....	3,626	4,029	7,176	18,825	4,241
13.....	11,499	13,642	25,153	9,228	11,840	4,640	.....	3,620	3,692	7,195	16,548	4,146
14.....	10,975	10,425	26,736	10,526	11,330	5,220	.....	2,077	2,667	5,804	15,249	2,318
15.....	16,160	9,074	35,829	10,526	9,800	8,290	2,216	3,225	3,466	6,340	18,511	3,311
16.....	10,147	8,100	31,135	12,918	10,660	7,280	2,159	3,225	2,936	9,500	12,921	3,952
17.....	9,672	5,682	29,786	12,450	10,780	6,030	1,055	3,198	4,184	10,906	11,346	4,512
18.....	7,815	7,480	30,085	12,918	11,380	4,890	2,192	3,135	5,294	9,947	10,455	4,509
19.....	7,008	7,788	27,804	11,954	10,090	4,400	2,224	3,353	2,645	8,149	10,806	4,261
20.....	7,952	7,571	27,782	11,946	10,060	5,950	2,175	4,717	3,926	8,203	14,122	4,517
21.....	13,757	8,009	33,867	11,656	9,110	4,800	2,192	2,983	2,516	8,641	15,266	4,613
22.....	10,170	7,906	32,204	10,818	7,200	4,720	3,029	4,662	2,191	8,069	12,265	4,429
23.....	9,780	7,258	29,131	10,805	8,969	4,610	8,624	3,982	2,343	7,509	11,554	5,818
24.....	11,456	6,524	25,806	10,580	8,960	4,760	2,077	5,352	2,299	8,764	10,673	9,967
25.....	9,436	6,263	23,372	21,270	10,158	4,285	3,592	.....	7,691	8,735	10,945	8,826
26.....	8,628	5,992	20,390	25,060	12,745	3,600	4,542	.....	7,952	8,052	10,046	8,031
27.....	7,788	5,294	17,760	25,100	15,840	4,880	4,257	.....	7,510	9,903	8,990	6,286
28.....	7,719	5,911	18,100	21,265	16,230	3,728	3,715	.....	5,134	12,652	4,339	5,966
29.....	6,624	.....	18,660	19,120	14,700	8,728	3,465	.....	4,062	12,142	7,652	4,789
30.....	5,851	.....	21,570	15,730	13,928	3,808	3,198	.....	8,581	11,076	6,676	4,764
31.....	4,660	.....	20,980	.....	11,130	.....	1,794	.....	.....	11,265	.....	5,267
Mean...	7,706	6,757	18,844	13,653	11,069	5,296	2,630	4,964	4,246	8,685	10,025	5,591

Note.— Mean discharge July 9-14 estimated as 2,000 sec.-ft. and Aug. 25-31, as 8,000 sec.-ft.; based on records at West Virginia Pulp & Paper Co.'s dam.

Monthly discharge, in second-feet, of HUDSON RIVER AT DAM OF ADIRONDACK ELECTRIC POWER CORPORATION (LOWER DAM), MEGANVILLE  
[Drainage area, 4,570 square miles]

1898	DISCHARGE IN SECOND-FEET				Run-off Depth in inches on drainage area
	Maximum	Minimum	Mean	Per square mile	
January.....	13,757	*4,689	7,706	1.69	1.95
February.....	13,042	4,151	6,757	1.48	1.54
March.....	36,736	*3,938	18,844	4.12	4.75
April.....	25,109	*7,400	13,653	2.99	3.24
May.....	16,230	*7,200	11,089	2.42	2.60
June.....	10,128	*3,100	5,296	1.16	1.30
July.....	4,542	*1,055	2,630	0.575	0.66
August.....	†12,500	*2,077	4,964	1.086	1.25
September.....	7,952	2,191	4,249	0.930	1.04
October.....	24,538	1,907	8,685	1.90	2.10
November.....	21,456	4,339	10,025	2.32	2.50
December.....	9,967	3,311	5,591	1.22	1.41
The year.....	36,736	*1,055	8,353	1.83	21.81

\* Sunday. † August, maximum estimated.

Note.— Above tables supersede those published in Report of State Engineer for 1910, pages 621 and 627. For list of changes see page 258.

**Daily discharge, in second-feet, of HUDSON RIVER AT DAM OF ADIRONDACK ELECTRIC  
POWER CORPORATION (LOWER DAM), MECHANICVILLE**

1899	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	4,025	3,229	9,298	9,411	27,782	3,753	1,728	1,476	1,354	4,776	3,981	2,891
2.....	4,602	3,223	7,981	8,406	29,017	4,493	1,659	974	1,153	4,298	7,467	3,440
3.....	4,319	3,669	7,016	9,101	28,795	3,685	2,538	1,244	639	3,867	13,178	3,735
4.....	5,248	3,679	7,140	9,293	24,760	3,113	232	1,392	596	2,552	12,208	4,652
5.....	10,519	3,375	7,364	11,325	20,639	3,016	1,250	771	1,908	2,120	11,818	7,424
6.....	9,692	3,673	22,130	11,826	17,945	2,836	1,359	435	1,881	2,588	11,231	5,673
7.....	9,771	3,780	14,535	13,950	14,617	2,197	1,275	1,380	1,737	2,100	10,256	4,498
8.....	7,748	3,140	10,448	21,217	13,067	2,458	962	1,347	1,454	2,069	9,112	4,293
9.....	8,755	2,035	10,305	18,801	11,590	2,010	488	1,325	980	1,850	7,467	3,262
10.....	7,272	2,386	9,239	17,451	10,402	1,704	2,741	1,352	211	1,881	6,338	3,000
11.....	6,587	2,045	8,765	17,831	9,106	2,325	3,834	595	1,411	2,364	5,723	2,963
12.....	5,977	2,523	8,315	18,940	9,195	2,388	2,831	1,438	1,333	2,495	6,147	3,483
13.....	6,061	2,550	17,611	19,537	8,696	2,172	3,027	625	1,350	2,677	5,688	9,863
14.....	6,433	2,621	13,133	22,901	7,911	1,723	2,366	783	1,325	1,975	5,277	15,502
15.....	10,009	2,160	11,800	28,507	8,857	1,717	2,012	1,450	1,419	1,598	4,536	15,108
16.....	10,279	2,090	11,058	32,280	9,250	3,429	2,162	1,392	790	1,376	4,350	13,443
17.....	10,792	2,630	10,048	32,687	7,343	3,386	2,078	1,479	401	2,229	4,744	9,684
18.....	11,495	2,820	8,966	30,009	6,689	3,299	3,135	1,352	1,517	1,418	3,913	9,591
19.....	8,621	3,098	9,874	29,477	5,377	2,735	3,332	994	1,370	1,512	4,307	10,317
20.....	7,473	3,570	11,557	34,126	5,585	1,820	2,109	213	1,370	1,960	3,890	10,655
21.....	7,087	3,930	12,052	35,349	7,978	1,851	1,954	1,385	1,370	1,997	4,621	11,037
22.....	6,361	4,310	10,448	35,861	7,784	2,336	2,376	1,330	1,374	206	4,410	10,626
23.....	5,985	14,028	9,876	35,583	6,063	1,547	947	684	1,333	2,030	3,969	9,776
24.....	5,806	9,180	9,770	37,251	5,688	1,534	2,570	1,341	647	2,149	4,130	8,208
25.....	7,740	7,571	9,671	38,351	5,599	330	2,015	1,409	1,488	2,233	3,342	8,711
26.....	6,810	5,325	8,314	39,943	4,953	1,636	2,126	1,404	1,999	2,222	2,086	5,942
27.....	5,420	5,503	8,165	38,404	4,385	1,039	1,851	644	7,182	2,469	3,590	5,818
28.....	5,479	12,253	8,383	36,912	4,203	1,735	1,760	1,406	6,757	2,226	3,342	4,698
29.....	4,686	.....	8,194	34,486	3,927	1,800	1,837	1,425	6,474	211	2,889	3,705
30.....	4,677	.....	9,426	30,834	3,686	2,122	235	1,392	6,093	2,421	3,348	3,051
31.....	4,311	.....	8,473	.....	4,126	.....	2,368	1,321	.....	2,954	.....	2,912
Mean...	7,099	4,300	10,302	25,335	10,806	2,325	1,973	1,154	1,963	2,220	5,912	7,032

NOTE.— June 11 and December 10 estimated.

**Monthly discharge, in second-feet, of HUDSON RIVER AT DAM OF ADIRONDACK  
ELECTRIC POWER CORPORATION (LOWER DAM), MECHANICVILLE**  
[Drainage area, 4,570 square miles]

1899	DISCHARGE IN SECOND-FEET				RUN-OFF
	Maximum	Minimum	Mean	Per square mile	
January.....	11,495	*4,025	7,099	1.55	1.79
February.....	14,028	2,035	4,300	0.94	0.98
March.....	22,130	7,016	10,302	2.25	2.69
April.....	39,943	*8,406	25,335	5.54	6.18
May.....	29,017	3,686	10,806	2.36	2.73
June.....	4,493	*330	2,325	0.509	0.57
July.....	3,834	232	1,973	0.432	0.50
August.....	1,479	*213	1,154	0.253	0.29
September.....	7,162	*211	1,963	0.429	0.48
October.....	4,776	*206	2,220	0.486	0.56
November.....	13,178	*2,086	5,912	1.29	1.44
December.....	15,502	2,891	7,032	1.51	1.77
The year.....	39,943	*206	6,698	1.47	19.89

\* Sunday.

NOTE.— Above tables supersede those published in Report of State Engineer for 1910, pages 621 and 628. For list of changes see page 258.

**Daily discharge, in second-feet, of HUDSON RIVER AT DAM OF ADIRONDACK ELECTRIC  
POWER CORPORATION (LOWER DAM), MECHANICVILLE**

1900	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	2,920	5,565	6,562	10,654	19,263	4,439	594	2,048	1,904	2,779	2,265	9,986
2.....	2,368	3,743	20,574	12,617	18,439	5,834	1,400	2,079	1,117	1,263	1,530	7,504
3.....	2,346	4,253	13,199	13,226	17,351	4,055	1,529	1,553	1,117	1,294	1,923	7,153
4.....	2,479	3,049	11,006	13,911	16,904	3,968	1,238	1,592	1,465	1,508	1,614	5,645
5.....	2,763	4,335	9,161	13,911	14,163	6,764	1,617	778	2,110	1,396	1,957	12,016
6.....	2,928	6,071	8,309	14,914	11,825	6,224	1,203	1,567	1,744	1,033	1,314	10,461
7.....	3,167	5,188	16,172	17,788	10,604	6,366	1,214	1,478	1,676	1,221	1,745	9,733
8.....	3,495	5,186	9,011	21,782	13,347	5,614	716	1,691	1,391	2,167	1,203	9,455
9.....	3,199	20,404	8,475	22,274	11,362	4,580	1,517	1,991	475	1,481	1,203	7,748
10.....	2,712	14,694	9,023	19,798	10,689	4,932	1,203	2,332	1,325	1,422	1,502	6,874
11.....	2,308	10,132	8,441	17,670	12,550	5,677	1,193	1,686	1,330	1,500	3,455	3,114
12.....	2,536	8,452	8,261	16,959	10,581	5,339	1,207	1,501	1,213	1,777	2,725	3,258
13.....	2,164	24,034	6,954	17,151	8,911	4,121	1,210	2,310	1,504	2,220	3,305	4,396
14.....	1,915	47,291	7,338	16,353	10,397	4,589	1,207	2,240	1,211	830	3,197	4,273
15.....	2,631	28,189	7,581	13,143	9,545	4,013	630	1,990	1,015	1,542	2,782	4,355
16.....	2,549	25,488	5,339	15,775	10,389	4,298	1,515	3,006	1,009	1,700	2,559	2,476
17.....	2,543	20,243	5,341	17,672	10,022	2,618	1,203	5,358	1,504	1,700	2,725	3,407
18.....	2,473	19,489	4,673	23,982	9,005	3,534	1,203	5,084	1,409	1,739	2,268	3,285
19.....	2,611	17,313	6,744	34,106	9,040	4,046	1,205	3,795	1,321	1,022	2,340	3,583
20.....	9,457	14,380	22,202	42,308	12,280	3,166	1,189	2,752	1,530	1,504	2,603	3,250
21.....	20,200	12,542	13,369	44,372	12,500	2,067	1,189	3,095	1,225	617	3,773	3,048
22.....	13,793	11,648	11,111	43,181	11,087	1,695	410	2,303	1,393	1,618	10,078	2,760
23.....	11,820	16,259	10,201	43,958	9,760	2,164	1,414	1,938	1,745	1,298	11,041	2,114
24.....	10,607	11,741	10,104	43,066	9,580	1,823	1,210	2,090	1,231	1,521	11,086	2,764
25.....	9,756	12,157	8,035	40,838	9,253	1,990	1,210	2,219	1,406	1,781	8,040	5,748
26.....	9,729	9,131	9,473	36,916	7,417	2,195	1,747	900	1,404	1,786	10,049	4,863
27.....	7,356	7,230	8,653	31,393	4,619	2,011	2,378	1,465	1,503	1,769	13,582	4,353
28.....	6,463	6,619	9,206	28,419	7,953	1,983	4,090	1,252	2,240	1,330	13,008	4,099
29.....	6,487	.....	10,044	22,688	6,626	1,409	2,628	1,793	2,066	1,811	12,893	3,132
30.....	5,221	.....	10,390	22,649	4,715	1,804	2,621	1,580	1,617	2,784	11,611	6,458
31.....	5,307	.....	11,150	.....	4,353	.....	2,487	1,816	.....	2,665	.....	4,099
Mean...	5,365	13,388	9,876	24,449	10,791	3,944	1,464	2,170	1,410	1,603	4,979	5,336

**Monthly discharge, in second-feet, of HUDSON RIVER AT DAM OF ADIRONDACK  
ELECTRIC POWER CORPORATION (LOWER DAM), MECHANICVILLE**

[Drainage area, 4,570 square miles]

1900	DISCHARGE IN SECOND-FEET				RUN-OFF
	Maximum	Minimum	Mean	Per square mile	
January.....	20,200	*1,915	5,365	1.17	1.35
February.....	47,291	*3,049	13,388	2.93	3.05
March.....	22,202	*4,673	9,876	2.16	2.49
April.....	44,372	*10,654	24,449	5.35	5.97
May.....	19,263	4,353	10,791	2.36	2.72
June.....	8,968	1,409	3,944	0.863	0.96
July.....	4,090	*410	1,464	0.320	0.37
August.....	5,358	*778	2,170	0.475	0.55
September.....	2,240	*475	1,410	0.309	0.35
October.....	2,784	*617	1,603	0.351	0.40
November.....	13,582	1,203	4,979	1.09	1.22
December.....	12,016	*2,114	5,336	1.17	1.35
The year.....	47,291	*410	6,995	1.53	20.78

\* Sunday.

NOTE.—Above tables supersede those published in Report of State Engineer for 1910, pages 622 and 628. For list of changes see page 258.



**Daily discharge, in second-feet, of HUDSON RIVER AT DAM OF ADIRONDACK ELECTRIC  
POWER CORPORATION (LOWER DAM), MECHANICVILLE**

1901	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	3,806	1,576	1,772	17,488	20,271	14,127	3,893	5,869	2,084	4,280	3,337	2,024
2.....	3,681	2,356	2,215	16,930	19,374	12,692	3,681	4,940	2,761	4,789	3,296	3,321
3.....	3,303	1,462	1,442	16,366	16,539	12,638	3,648	4,267	5,253	3,799	2,894	3,414
4.....	2,841	2,630	1,763	20,258	16,552	13,708	2,209	2,135	5,026	2,325	3,893	3,368
5.....	2,646	2,514	1,776	14,553	22,325	13,145	1,954	2,889	4,998	3,307	3,275	3,486
6.....	2,171	2,122	2,281	19,444	13,123	11,583	3,146	2,274	4,916	2,574	3,716	2,945
7.....	2,625	2,174	2,131	25,266	12,000	11,073	2,420	2,529	4,585	4,140	3,893	2,552
8.....	2,763	1,924	1,482	37,743	10,553	15,499	2,935	4,801	3,789	3,611	3,611	2,214
9.....	2,800	1,603	1,875	36,963	10,347	16,342	3,126	5,897	3,818	3,078	3,622	3,835
10.....	2,769	1,567	2,577	33,564	10,061	14,894	2,918	6,667	3,630	3,085	2,938	3,765
11.....	2,756	1,553	3,520	30,392	9,869	13,630	2,891	3,577	2,930	3,253	3,192	9,939
12.....	2,850	1,553	18,376	26,509	9,863	12,130	3,534	6,576	2,946	3,273	3,611	9,682
13.....	1,961	1,548	7,845	25,358	10,980	10,093	3,634	5,757	2,912	2,473	5,147	7,480
14.....	2,945	2,156	5,799	25,213	11,986	9,190	2,627	4,955	4,286	4,911	5,069	8,265
15.....	2,767	1,880	5,161	25,796	11,358	8,869	2,192	3,587	3,763	3,076	5,083	18,684
16.....	1,978	1,744	4,588	25,779	12,583	11,281	2,921	3,766	4,998	7,657	4,862	34,329
17.....	4,600	1,166	4,546	26,525	10,539	10,373	2,202	2,943	4,656	7,847	2,680	20,776
18.....	4,416	1,469	4,093	26,679	10,441	5,309	2,197	3,577	5,013	6,377	4,328	20,473
19.....	2,957	2,314	4,756	28,046	14,488	4,677	2,042	4,146	3,296	5,090	4,367	17,178
20.....	1,592	1,886	4,570	27,762	15,267	4,817	2,946	2,804	4,682	3,715	3,622	12,556
21.....	2,515	1,755	7,884	20,776	17,555	4,105	2,622	4,656	3,882	4,994	3,670	10,025
22.....	3,075	1,719	21,013	39,727	14,570	5,464	3,004	4,893	2,682	4,636	2,804	4,890
23.....	2,884	1,824	12,688	49,098	12,779	10,425	2,912	4,676	3,735	4,994	3,226	5,376
24.....	1,960	1,175	12,315	52,947	15,100	8,743	2,921	4,458	2,324	4,601	2,381	6,659
25.....	2,342	1,450	12,306	60,661	13,123	8,287	2,909	6,294	2,959	4,200	2,998	5,717
26.....	2,878	2,062	17,927	44,851	13,771	6,886	2,179	6,401	2,544	3,653	3,689	6,544
27.....	2,167	2,047	22,826	35,235	11,457	5,576	2,159	4,916	3,286	2,455	3,450	6,778
28.....	2,801	1,176	23,206	29,069	14,132	5,404	1,575	4,477	3,625	3,884	2,386	5,689
29.....	2,299	.....	20,629	24,392	14,070	4,729	2,191	4,477	3,154	3,758	2,592	4,615
30.....	2,661	.....	18,168	22,111	14,121	3,806	4,283	4,298	4,664	3,653	2,566	11,362
31.....	2,349	.....	17,516	.....	14,570	.....	4,706	3,394	.....	3,276	.....	11,258
Mean...	2,760	1,901	8,739	29,217	13,668	9,648	2,865	4,423	3,807	4,168	3,568	8,684

**Monthly discharge, in second-feet, of HUDSON RIVER AT DAM OF ADIRONDACK  
ELECTRIC POWER CORPORATION (LOWER DAM), MECHANICVILLE**

[Drainage area, 4,579 square miles]

1901	DISCHARGE IN SECOND-FEET				Run-off Depth in inches on drainage area
	Maximum	Minimum	Mean	Per square mile	
January.....	4,600	*1,592	2,760	0.604	0.70
February.....	2,636	*1,166	1,801	0.394	0.41
March.....	23,206	*1,442	8,739	1.91	2.10
April.....	52,947	14,553	29,217	6.39	7.33
May.....	22,325	*9,863	13,668	2.99	3.45
June.....	16,342	*3,806	9,648	2.11	2.36
July.....	4,706	*1,575	2,865	0.627	0.72
August.....	6,667	*2,135	4,423	0.968	1.12
September.....	5,253	*2,084	3,807	0.833	0.93
October.....	7,657	*2,455	4,168	0.912	1.05
November.....	5,147	*2,331	3,568	0.781	0.87
December.....	34,329	*2,024	8,684	1.90	2.19
The year.....	53,947	*1,166	7,787	1.70	23.13

\* Sunday.

NOTE.—Above tables supersede those published in Report of State Engineer for 1910, pages 622 and 628. For list of changes see page 258.

## Daily discharge, in second-feet, of HUDSON RIVER AT DAM OF ADIRONDACK ELECTRIC POWER CORPORATION (LOWER DAM), MECHANICVILLE

1902	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1. ....	3,848	5,230	36,437	30,849	21,922	6,211	6,730	6,765	3,203	6,096	21,310	5,010
2. ....	5,339	5,098	29,863	24,617	21,291	7,396	6,730	8,089	3,823	6,096	13,618	4,706
3. ....	5,339	5,578	44,288	24,488	16,479	6,485	6,765	9,011	3,823	7,350	11,299	4,623
4. ....	4,565	3,863	32,300	21,491	16,703	5,885	11,458	9,104	3,693	5,968	10,235	5,926
5. ....	3,282	4,290	31,547	18,672	15,829	6,941	15,116	8,444	3,635	5,134	8,928	5,926
6. ....	5,151	3,195	23,587	15,751	15,579	7,093	13,588	7,968	3,647	4,819	9,144	5,138
7. ....	5,069	3,323	25,836	14,577	15,166	6,622	12,072	8,395	2,356	4,662	7,718	4,760
8. ....	4,997	3,457	20,489	13,437	13,357	5,784	10,046	9,366	4,009	5,145	7,292	4,541
9. ....	5,074	3,024	19,749	13,717	11,136	6,941	8,482	9,366	4,515	5,459	6,441	4,099
10. ....	5,194	4,611	18,018	23,295	11,121	6,181	7,483	9,022	4,165	5,459	6,729	4,127
11. ....	5,209	3,050	16,643	28,726	10,228	6,789	7,467	8,840	4,339	4,330	5,947	4,505
12. ....	3,354	3,304	19,740	27,151	8,489	6,485	7,093	10,682	4,819	4,185	5,092	4,492
13. ....	3,934	3,168	23,879	25,575	7,420	6,485	7,448	9,380	4,917	4,819	5,112	4,505
14. ....	3,158	3,290	28,027	22,535	7,284	6,014	6,181	7,981	4,240	4,350	5,416	3,806
15. ....	2,882	3,151	28,734	16,937	7,116	5,711	5,501	6,751	5,500	3,917	8,098	4,579
16. ....	4,490	2,205	29,058	9,424	6,037	6,166	5,501	6,751	4,304	4,248	7,819	4,496
17. ....	3,557	3,123	30,303	11,810	6,660	7,093	6,618	4,920	3,613	4,819	7,673	4,572
18. ....	3,572	2,568	45,449	11,831	5,802	7,230	6,470	5,791	3,669	4,971	3,916	29,575
19. ....	2,971	2,900	40,380	11,252	5,622	7,093	5,862	5,330	3,624	4,185	7,064	13,996
20. ....	3,602	3,040	33,734	13,451	5,359	6,517	6,373	5,004	2,882	6,035	6,226	12,093
21. ....	2,858	3,344	28,123	11,745	7,436	5,862	13,639	5,004	1,753	7,317	6,640	13,892
22. ....	2,818	3,280	27,289	10,067	5,705	6,015	13,989	5,088	3,136	6,105	5,500	12,401
23. ....	10,634	2,473	25,261	10,421	4,997	7,396	12,737	5,004	2,919	6,166	5,922	17,635
24. ....	7,114	3,625	24,076	11,806	5,179	7,078	12,151	3,982	2,971	6,120	8,848	17,635
25. ....	6,166	3,179	30,374	9,859	3,529	6,455	12,739	5,004	2,936	5,317	5,381	16,238
26. ....	5,528	3,291	29,155	8,668	7,515	5,862	12,151	4,661	2,988	5,317	5,314	16,258
27. ....	7,734	7,329	25,992	9,514	7,518	6,166	10,603	4,482	3,153	5,209	5,010	14,862
28. ....	9,553	9,813	18,310	13,268	14,965	7,237	11,113	4,304	2,962	7,323	5,533	11,232
29. ....	6,139	.....	22,535	12,427	12,072	6,070	10,419	4,092	4,905	18,409	5,229	11,232
30. ....	5,598	.....	28,726	12,174	10,448	6,767	9,367	3,937	6,081	17,664	4,621	9,680
31. ....	5,422	.....	30,849	.....	10,466	.....	8,075	2,937	.....	18,811	.....	5,710
Mean...	4,973	3,849	28,027	16,304	10,268	6,534	9,352	6,628	3,753	6,639	7,336	9,106

## Monthly discharge, in second-feet, of HUDSON RIVER AT DAM OF ADIRONDACK ELECTRIC POWER CORPORATION (LOWER DAM), MECHANICVILLE

[Drainage area, 4,570 square miles]

1902	DISCHARGE IN SECOND-FEET				RUN-OFF Depth in inches on drainage area
	Maximum	Minimum	Mean	Per square mile	
January .....	10,634	2,818	4,973	1.09	1.26
February .....	9,813	*2,205	3,849	0.842	0.88
March .....	45,449	16,643	28,027	6.13	7.07
April .....	30,849	8,668	16,304	3.57	3.98
May .....	21,922	*3,529	10,268	2.25	2.59
June .....	7,396	*5,711	6,534	1.43	1.60
July .....	15,116	5,501	9,352	2.05	2.36
August .....	10,682	*2,937	6,628	1.45	1.67
September .....	6,081	*1,753	3,753	0.821	0.92
October .....	18,811	3,917	6,639	1.45	1.67
November .....	21,310	3,916	7,336	1.61	1.79
December .....	29,575	*3,806	9,104	1.99	2.29
The year .....	45,449	*1,753	9,453	2.07	28.08

\* Sunday.

NOTE.—Above tables supersede those published in Report of State Engineer for 1910, pages 623 and 628. For list of changes see page 258.

**Daily discharge, in second-feet, of HUDSON RIVER AT DAM OF ADIRONDACK ELECTRIC  
POWER CORPORATION (LOWER DAM), MECHANICVILLE**

1903	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	9,955	10,733	25,838	24,452	5,982	2,341	9,235	4,899	10,597	4,279	6,009	4,435
2.....	9,196	11,350	19,066	23,411	6,031	2,334	8,809	4,228	9,578	2,612	5,861	4,445
3.....	8,299	10,831	17,634	21,207	5,616	2,299	8,809	5,378	8,650	2,497	5,543	4,051
4.....	10,959	11,196	13,174	23,020	6,031	2,354	7,611	4,778	8,170	755	4,422	5,068
5.....	10,439	16,631	15,200	24,943	13,669	3,225	8,071	4,760	6,997	1,649	504	4,083
6.....	9,661	12,461	15,060	24,849	5,587	2,299	6,140	5,766	5,139	2,561	5,161	3,351
7.....	8,973	11,333	14,039	24,922	6,003	7,477	6,230	7,259	5,563	3,565	5,268	4,377
8.....	8,560	10,247	14,941	21,516	5,544	2,341	5,507	7,259	5,073	3,459	4,906	3,979
9.....	9,196	8,801	27,949	21,516	6,118	3,093	4,599	7,394	4,887	3,417	4,806	4,036
10.....	6,662	9,059	26,368	20,468	5,591	2,347	4,653	5,851	4,259	24,815	5,259	3,293
11.....	9,478	8,390	42,277	20,150	4,769	4,869	4,795	5,720	4,259	24,545	5,298	3,265
12.....	5,702	15,154	44,342	20,889	4,742	9,823	3,891	5,890	4,310	15,811	4,970	3,282
13.....	5,184	14,284	44,345	17,996	3,965	13,025	3,372	8,266	4,284	17,633	4,970	3,007
14.....	5,129	12,461	41,529	15,724	4,813	13,710	4,215	8,266	4,247	16,335	4,790	4,724
15.....	6,084	11,652	39,012	13,980	4,813	13,580	5,087	7,103	4,247	13,782	3,287	4,664
16.....	5,101	9,772	32,000	13,409	4,787	13,322	4,944	5,789	3,304	10,769	5,738	5,115
17.....	6,126	7,515	28,768	12,214	3,061	9,662	4,216	5,741	2,423	8,876	5,269	3,997
18.....	6,927	7,515	26,412	14,655	4,051	8,873	4,113	5,507	4,247	8,058	7,805	4,102
19.....	4,966	7,611	24,485	11,912	4,051	9,461	3,250	4,884	4,310	12,831	8,652	4,014
20.....	4,678	7,026	25,251	11,892	3,439	7,328	4,276	5,774	4,319	14,829	6,170	2,380
21.....	4,695	7,027	28,026	9,301	4,024	9,325	4,204	6,543	3,474	13,803	5,506	12,450
22.....	5,108	7,229	36,672	8,649	4,024	20,438	4,074	4,113	4,252	12,637	4,437	9,334
23.....	7,128	6,594	40,238	7,784	3,936	18,900	4,928	4,302	3,466	10,730	5,351	5,943
24.....	6,148	8,146	43,646	7,605	742	17,602	10,718	5,840	2,490	10,757	5,215	6,390
25.....	6,053	6,934	49,737	7,621	4,009	18,240	7,991	5,699	2,602	8,987	5,050	6,180
26.....	5,892	6,630	49,020	8,445	2,299	18,240	6,904	5,656	3,511	10,088	3,906	6,242
27.....	5,615	6,648	39,046	7,367	2,229	17,623	5,899	9,106	2,052	7,724	3,102	4,584
28.....	5,892	9,376	39,210	5,846	1,547	15,718	4,724	8,207	2,563	8,209	3,263	4,224
29.....	4,828	.....	27,156	6,879	1,625	12,177	3,897	7,210	3,526	6,994	2,555	4,224
30.....	9,943	.....	23,620	5,567	2,337	10,630	4,760	7,293	2,536	6,151	4,257	4,525
31.....	12,378	.....	24,415	.....	887	.....	4,795	10,576	.....	5,496	.....	4,140
Mean...	7,257	9,736	30,273	15,273	4,398	9,755	5,636	6,292	4,644	9,505	4,911	4,771

**Monthly discharge, in second-feet, of HUDSON RIVER AT DAM OF ADIRONDACK ELECTRIC  
POWER CORPORATION (LOWER DAM), MECHANICVILLE**  
[Drainage area, 4,570 square miles]

1903	DISCHARGE IN SECOND-FEET			RUN-OFF	
	Maximum	Minimum	Mean	Per square mile	Depth in inches on drainage area
January.....	12,378	4,678	7,257	1.59	1.83
February.....	16,631	6,594	9,736	2.13	2.22
March.....	49,737	13,174	30,273	6.62	7.63
April.....	24,943	5,567	15,273	3.34	3.73
May.....	13,669	*742	4,398	0.962	1.11
June.....	20,438	2,299	9,755	2.14	2.39
July.....	10,718	*3,250	5,636	1.23	1.42
August.....	10,576	4,113	6,292	1.38	1.59
September.....	10,597	*2,052	4,644	1.02	1.14
October.....	24,815	*755	9,505	2.08	2.40
November.....	8,652	504	4,911	1.07	1.19
December.....	12,450	*2,380	4,771	1.04	1.20
The year.....	49,737	504	9,376	2.05	27.85

\* Sunday.

NOTE.—Above tables supersede those published in Report of State Engineer for 1910, pages 623 and 628. For list of changes see page 258.

Daily discharge, in second-feet, of HUDSON RIVER at DAM of ADIRONDACK ELECTRIC  
POWER CORPORATION (LOWER DAM), MECHANICVILLE

1904	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1. ....	4,044	4,806	4,456	14,833	29,725	5,814	3,116	4,797	3,068	16,200	8,703	3,280
2. ....	3,112	3,863	4,374	18,491	29,784	5,835	3,982	4,125	2,207	17,164	7,683	4,065
3. ....	3,310	3,568	4,130	17,731	27,906	4,862	859	3,152	3,598	15,201	6,886	3,391
4. ....	3,636	3,140	9,336	20,786	26,879	3,634	915	4,185	4,144	31,678	6,269	2,338
5. ....	3,128	2,973	6,050	16,011	24,886	3,037	4,816	3,152	5,015	9,090	6,194	3,452
6. ....	3,569	3,225	6,637	19,217	23,361	4,987	4,792	2,862	5,257	10,246	6,444	3,455
7. ....	3,208	3,022	5,675	20,507	20,434	5,376	4,829	5,360	5,565	9,305	6,820	4,241
8. ....	3,885	10,994	13,608	23,553	22,921	7,930	4,829	8,023	4,328	8,023	6,138	2,094
9. ....	3,965	7,873	11,412	28,796	16,367	20,665	5,235	3,873	3,398	4,627	5,087	4,211
10. ....	2,278	5,503	11,721	30,024	15,691	25,531	4,254	3,183	2,182	6,965	5,010	1,686
11. ....	3,831	5,949	10,553	38,210	15,709	17,076	5,045	3,126	3,416	5,916	5,256	510
12. ....	3,975	5,970	9,530	35,715	14,111	11,528	5,045	3,231	3,850	7,796	4,199	2,680
13. ....	3,657	6,030	8,072	33,645	9,992	15,135	3,967	3,117	3,850	10,813	3,075	1,705
14. ....	3,068	4,790	8,278	28,878	8,928	10,193	3,967	3,116	3,044	10,173	5,807	1,534
15. ....	2,844	5,760	8,096	24,827	7,554	8,516	3,983	3,446	9,845	9,160	4,839	1,666
16. ....	3,081	5,173	7,245	21,824	5,330	7,530	3,967	2,318	4,668	3,092	6,022	1,666
17. ....	2,474	4,741	6,527	17,604	12,476	7,445	911	2,466	8,945	7,529	5,010	2,435
18. ....	3,029	4,472	6,533	19,007	13,116	5,811	3,951	3,191	2,426	7,094	5,067	2,097
19. ....	3,133	3,854	6,666	15,958	10,621	4,083	3,982	3,141	6,976	5,970	4,171	1,883
20. ....	3,003	4,004	6,009	16,983	12,232	5,435	3,921	3,045	4,981	5,005	2,031	2,580
21. ....	3,277	3,153	8,763	15,353	15,377	4,538	3,921	5,568	4,847	5,218	4,980	2,620
22. ....	2,226	4,346	8,384	14,795	8,097	2,797	3,998	9,033	4,125	15,781	5,882	2,744
23. ....	3,260	4,885	9,281	13,605	9,910	3,726	2,479	2,529	4,201	25,536	4,113	2,763
24. ....	9,674	6,253	14,756	12,651	8,964	5,170	718	1,953	3,981	22,246	4,823	2,717
25. ....	7,001	5,340	14,201	14,974	8,402	5,194	3,092	3,353	3,191	17,812	5,487	1,413
26. ....	5,847	4,929	22,966	17,393	7,768	2,297	2,601	8,228	5,882	10,129	5,827	3,491
27. ....	5,109	4,593	23,017	19,147	8,370	3,389	2,249	5,208	5,698	17,136	2,692	3,876
28. ....	4,435	3,823	22,258	20,912	7,770	3,860	2,379	5,116	5,723	11,801	4,221	21,698
29. ....	3,897	4,681	14,833	24,199	6,593	3,080	3,748	4,437	5,738	11,478	4,849	10,157
30. ....	3,914	.....	15,546	27,658	6,725	3,080	3,951	3,263	9,427	9,603	4,887	8,052
31. ....	3,728	.....	16,259	.....	7,768	.....	1,848	2,198	.....	9,548	.....	7,247
Mean...	3,825	4,887	10,490	21,443	14,315	7,252	3,404	3,993	4,786	11,527	5,282	3,798

Monthly discharge, in second-feet, of HUDSON RIVER at DAM of ADIRONDACK ELECTRIC  
POWER CORPORATION (LOWER DAM), MECHANICVILLE

[Drainage area, 4,570 square miles]

1904	DISCHARGE IN SECOND-FEET				RUN-OFF Depth in inches on drainage area
	Maximum	Minimum	Mean	Per square mile	
January. ....	7,001	2,226	3,825	0.837	0.96
February. ....	10,994	2,973	4,887	1.07	1.15
March. ....	23,017	4,130	10,490	2.30	2.65
April. ....	38,210	*12,651	21,443	4.69	5.24
May. ....	29,784	5,330	14,315	3.13	3.81
June. ....	25,531	*2,297	7,252	1.59	1.77
July. ....	5,235	*718	3,464	0.758	0.87
August. ....	9,033	1,953	3,993	0.874	1.01
September. ....	9,845	2,182	4,786	1.05	1.17
October. ....	31,678	*3,092	11,527	2.52	2.91
November. ....	8,703	*2,031	5,282	1.16	1.29
December. ....	21,698	*510	3,798	0.831	0.96
The year. ....	38,210	*510	7,919	1.73	23.59

\* Sunday.

NOTE.—Above tables supersede those published in Report of State Engineer for 1910, pages 624 and 629. For list of changes see page 258.

**Daily discharge, in second-feet, of HUDSON RIVER AT DAM OF ADIRONDACK ELECTRIC POWER CORPORATION (LOWER DAM), MECHANICVILLE**

1905	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	7,084	2,843	2,984	40,426	9,637	4,690	9,184	11,167	4,450	5,688	5,263	9,867
2.....	8,788	3,013	3,334	39,826	10,011	5,471	7,003	11,974	3,578	6,872	5,463	8,209
3.....	7,765	3,389	2,917	33,526	11,368	4,090	11,389	9,282	4,878	6,872	6,443	10,224
4.....	5,352	2,401	2,515	28,020	8,964	2,400	12,093	7,448	12,441	6,202	6,747	23,511
5.....	4,204	1,833	1,176	24,240	9,482	4,236	13,507	4,398	17,868	6,017	5,595	20,105
6.....	4,734	4,201	1,996	26,476	9,492	4,669	12,464	4,425	21,734	5,295	7,844	11,883
7.....	5,645	3,244	2,073	29,857	8,071	4,193	11,442	5,416	18,851	6,981	8,274	9,398
8.....	12,182	3,075	2,527	26,388	8,994	4,109	9,979	6,271	16,756	3,826	6,617	11,654
9.....	9,789	2,594	2,765	22,234	8,051	6,325	8,211	6,964	13,102	7,957	8,790	12,582
10.....	7,160	4,535	2,073	22,012	8,451	12,079	7,949	4,753	9,422	6,405	7,934	13,015
11.....	7,228	2,928	2,715	16,670	8,374	8,227	7,295	5,806	11,813	4,378	8,441	7,774
12.....	7,225	1,795	2,209	21,486	8,451	7,021	6,053	7,666	11,759	5,012	6,104	7,245
13.....	9,400	2,513	2,244	21,258	6,487	7,365	5,856	7,151	11,327	5,199	8,040	6,853
14.....	9,094	2,523	3,032	20,740	6,651	7,320	5,438	7,056	10,796	10,832	6,864	6,851
15.....	5,025	2,902	2,451	20,246	7,107	7,728	5,268	4,581	9,394	8,932	6,543	3,794
16.....	5,519	2,479	2,391	16,900	6,273	6,826	3,300	6,301	7,821	9,300	6,566	5,039
17.....	5,832	2,538	3,084	16,346	7,483	6,021	4,575	8,094	6,742	7,005	6,104	4,024
18.....	5,690	2,519	3,027	13,624	6,699	3,996	5,004	9,916	8,455	6,350	6,273	4,360
19.....	5,750	1,185	10,998	11,149	6,607	7,348	4,871	8,123	16,465	5,815	4,709	6,303
20.....	5,453	1,596	6,803	10,774	5,832	8,962	4,621	5,734	18,704	5,819	5,790	3,936
21.....	5,422	1,810	5,275	10,235	5,551	11,824	4,861	7,916	21,462	7,376	4,729	5,853
22.....	4,013	2,350	5,062	10,599	6,514	17,340	4,966	8,051	21,066	11,145	4,458	8,434
23.....	5,039	3,097	2,604	15,110	6,026	15,329	2,294	4,564	17,464	7,945	4,133	8,434
24.....	4,358	2,221	6,379	15,170	5,158	12,969	4,304	3,857	14,144	7,351	4,476	7,234
25.....	4,602	2,729	3,982	12,195	5,146	10,180	4,447	3,351	14,215	7,264	3,793	4,130
26.....	2,655	925	13,109	13,587	4,496	10,387	4,405	3,991	11,421	6,374	3,256	6,575
27.....	3,466	2,212	19,082	11,500	4,387	12,158	4,165	3,265	8,557	5,862	4,664	5,886
28.....	3,489	3,207	19,996	11,575	4,188	12,621	4,003	2,336	8,605	5,727	4,925	5,721
29.....	3,296	.....	19,699	10,000	5,534	12,334	3,764	3,425	8,494	4,013	4,830	5,512
30.....	3,158	.....	27,147	8,921	5,117	11,167	5,387	2,336	7,655	7,051	13,312	6,383
31.....	3,230	.....	35,573	.....	3,988	.....	7,363	5,829	.....	5,724	.....	6,485
Mean...	5,866	2,598	7,138	19,370	7,053	8,313	6,622	6,176	12,314	6,668	6,238	8,300

**Monthly discharge, in second-feet, of HUDSON RIVER AT DAM OF ADIRONDACK ELECTRIC POWER CORPORATION (LOWER DAM), MECHANICVILLE**  
 (Drainage area, 4,570 square miles)

1905	DISCHARGE IN SECOND-FEET				RUN-OFF Depth in inches on drainage area
	Maximum	Minimum	Mean	Per square mile	
January.....	12,182	2,655	5,860	1.28	1.48
February.....	4,535	*925	2,598	0.568	0.59
March.....	35,573	*1,176	7,138	1.56	1.80
April.....	40,426	*8,921	19,370	4.24	4.73
May.....	11,368	3,988	7,056	1.54	1.78
June.....	17,340	*2,400	8,313	1.82	2.03
July.....	13,507	*2,294	6,622	1.45	1.67
August.....	11,974	2,336	6,176	1.35	1.56
September.....	21,734	3,578	12,314	2.69	3.00
October.....	11,145	*3,826	6,668	1.46	1.68
November.....	13,312	*3,256	6,238	1.37	1.53
December.....	23,541	3,794	8,300	1.82	2.10
The year.....	40,426	*925	8,061	1.76	23.96

\* Sunday.

NOTE.—Above tables supersede those published in Report of State Engineer for 1910, pages 624 and 629. For list of changes see page 253.

**Daily discharge, in second-feet, of HUDSON RIVER AT DAM OF ADIRONDACK ELECTRIC  
POWER CORPORATION (LOWER DAM), MCHANICVILLE**

1906	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	7,505	9,667	5,747	13,297	13,106	15,042	6,497	4,282	2,183	3,278	4,112	5,480
2.....	9,196	7,916	5,332	13,713	12,211	10,647	12,861	3,887	1,474	2,120	3,937	2,805
3.....	6,303	6,229	5,857	9,694	16,261	9,973	12,358	8,841	1,226	2,845	3,960	5,816
4.....	6,429	5,895	26,067	12,140	16,241	8,879	8,635	3,867	2,545	2,413	1,796	4,292
5.....	8,123	6,417	17,894	14,871	15,436	7,968	7,862	2,865	2,388	2,413	2,904	4,942
6.....	7,768	4,534	15,888	16,783	13,298	6,577	7,388	3,244	2,108	2,354	2,691	2,528
7.....	6,743	4,481	12,856	15,605	14,800	7,416	6,928	3,940	3,405	2,450	2,933	6,255
8.....	6,061	4,627	9,200	14,390	11,859	7,332	5,239	2,782	2,698	3,182	3,073	5,458
9.....	6,446	4,863	9,990	12,311	12,713	7,737	7,530	2,852	2,161	2,336	2,924	3,334
10.....	4,343	5,111	9,755	11,924	15,863	10,896	4,885	3,153	3,850	1,638	2,856	2,686
11.....	4,448	4,062	8,844	15,588	14,128	12,477	5,078	3,069	2,775	2,778	2,745	3,245
12.....	5,015	5,735	8,927	13,523	12,695	14,205	5,061	2,502	2,595	3,194	4,493	4,727
13.....	7,069	5,570	7,636	13,906	9,290	8,959	5,060	3,597	2,623	2,246	4,316	3,568
14.....	5,176	5,475	6,576	14,896	13,142	9,000	4,009	2,866	2,301	454	4,671	3,472
15.....	6,442	5,113	4,308	19,939	14,432	6,979	3,575	2,424	2,253	3,182	3,115	3,776
16.....	5,819	5,541	5,014	37,178	14,105	7,504	5,642	2,789	1,890	1,679	3,169	4,683
17.....	7,151	4,421	5,871	30,715	11,505	6,338	4,867	2,266	2,636	2,318	2,665	5,781
18.....	5,854	3,279	3,640	30,165	9,532	3,212	4,886	2,123	1,916	2,422	6,150	5,783
19.....	6,052	5,851	6,664	28,763	9,027	8,211	4,027	845	2,238	2,432	5,903	5,161
20.....	5,876	5,825	4,920	29,320	10,116	7,120	2,463	2,511	2,308	3,169	6,375	5,973
21.....	3,623	5,559	5,102	28,906	8,381	6,533	3,525	1,933	2,699	3,226	7,806	4,670
22.....	2,596	10,376	5,219	27,192	7,891	6,085	776	2,670	2,572	5,646	8,090	4,778
23.....	10,152	11,579	5,654	28,169	7,049	5,695	3,191	3,278	1,224	4,512	6,939	5,017
24.....	12,321	9,382	4,923	26,183	6,071	11,089	4,188	3,078	2,912	5,869	8,346	4,532
25.....	18,877	7,650	5,033	23,104	7,085	8,484	3,656	2,905	2,246	3,688	8,787	5,017
26.....	17,752	14,141	4,893	20,499	8,541	7,150	2,975	2,501	2,805	4,600	7,411	3,633
27.....	17,322	10,709	5,780	18,938	7,779	6,281	2,630	4,352	1,632	4,175	6,940	4,918
28.....	15,838	6,987	19,765	16,472	26,263	8,455	2,728	4,343	2,294	1,582	5,783	4,065
29.....	11,038	.....	14,420	13,925	27,363	5,864	1,200	3,993	2,397	5,032	7,544	5,054
30.....	8,934	.....	13,371	13,218	20,242	4,784	3,804	2,656	1,157	4,577	6,723	3,399
31.....	10,830	.....	15,405	.....	18,611	.....	4,405	2,102	.....	4,813	.....	6,399
Mean..	8,275	6,666	9,021	19,516	13,051	8,290	5,085	3,059	2,310	3,119	5,049	4,575

**Monthly discharge, in second-feet, of HUDSON RIVER AT DAM OF ADIRONDACK ELECTRIC  
POWER CORPORATION (LOWER DAM), MCHANICVILLE**

[Drainage area, 4,570 square miles]

1906	DISCHARGE IN SECOND-FEET				RUN-OFF Depth in inches on drainage area
	Maximum	Minimum	Mean	Per square mile	
January.....	18,877	2,596	8,275	1.81	2.90
February.....	14,141	*3,279	6,666	1.46	1.52
March.....	26,067	*6,640	9,021	1.97	2.36
April.....	37,178	9,694	19,516	4.27	4.76
May.....	27,363	6,071	13,051	2.86	3.20
June.....	15,042	4,784	8,290	1.81	2.62
July.....	12,861	*776	5,085	1.11	1.25
August.....	4,332	*345	3,059	0.670	0.77
September.....	3,850	1,157	2,310	0.505	0.56
October.....	5,899	*454	3,110	0.681	0.79
November.....	8,787	*1,796	5,049	1.10	1.22
December.....	6,399	2,528	4,575	1.00	1.15
The year.....	37,178	*345	7,323	1.60	21.75

\* Sunday

NOTE.—Above tables supersede those published in Report of State Engineer for 1910, pages 625 and 629. For list of changes see page 258.

**Daily discharge, in second-feet, of HUDSON RIVER AT DAM OF ADIRONDACK ELECTRIC  
POWER CORPORATION (LOWER DAM), MECHANICVILLE**

1907	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	10,103	5,067	2,537	34,121	22,381	6,696	5,023	2,101	1,404	8,698	14,606	4,746
2.....	13,369	2,985	3,109	28,992	23,108	6,434	5,829	3,152	1,292	9,253	12,725	7,500
3.....	10,331	3,835	844	24,545	21,626	7,170	5,495	3,118	1,281	9,130	16,052	5,744
4.....	10,360	3,619	3,147	21,948	20,581	7,175	4,286	1,819	1,849	6,644	18,839	5,779
5.....	9,838	4,393	2,504	18,431	22,741	5,859	5,533	1,982	9,358	9,022	18,065	3,344
6.....	9,211	3,615	2,537	18,512	20,693	6,809	7,558	2,322	10,742	5,919	17,103	5,363
7.....	10,678	3,875	2,141	16,482	21,878	6,896	4,475	1,943	6,479	7,180	26,380	4,955
8.....	10,959	3,990	2,917	16,429	20,355	7,305	6,018	1,853	4,305	8,322	29,736	3,375
9.....	10,188	3,792	1,957	14,214	18,151	5,181	4,521	2,058	5,315	10,280	28,782	4,396
10.....	8,884	2,856	1,446	14,171	17,283	7,196	2,998	2,379	4,912	12,624	20,972	9,035
11.....	9,958	3,665	2,538	12,841	15,760	6,056	3,457	1,020	4,259	14,322	27,483	22,722
12.....	7,708	3,749	2,900	12,700	12,720	5,636	3,947	947	8,950	18,286	18,903	21,185
13.....	5,657	3,239	3,124	13,462	13,890	4,879	3,270	2,320	5,033	11,701	17,027	18,882
14.....	5,707	3,432	4,108	11,585	11,974	5,405	1,793	2,086	7,216	12,091	15,129	14,755
15.....	5,521	3,450	9,142	11,431	10,852	4,819	3,116	1,515	6,024	7,996	12,624	12,638
16.....	5,247	3,781	8,459	9,960	10,161	2,981	2,621	1,302	5,812	7,003	11,306	12,574
17.....	5,837	2,173	10,053	11,046	12,951	6,360	2,685	1,262	4,768	6,322	8,992	13,280
18.....	6,085	2,860	9,735	10,338	14,132	4,464	2,751	1,163	4,161	6,170	9,876	11,023
19.....	6,065	3,658	8,756	8,990	11,845	4,481	2,468	1,247	3,584	5,574	8,525	9,123
20.....	8,392	3,019	7,895	8,329	10,841	2,519	3,015	1,701	2,255	3,856	8,091	8,159
21.....	7,635	3,292	8,137	5,697	8,682	2,962	5,450	1,440	2,676	5,961	7,406	8,615
22.....	6,142	3,291	7,855	8,120	8,163	5,368	3,244	1,840	1,053	5,274	8,117	7,494
23.....	6,000	3,326	9,399	7,552	7,587	3,312	3,013	1,732	2,834	5,297	8,165	8,642
24.....	5,481	2,041	12,156	9,282	7,451	4,202	2,626	1,362	5,077	5,023	7,911	18,007
25.....	5,381	2,753	12,845	15,798	7,305	4,080	6,158	1,290	4,745	5,193	8,100	20,174
26.....	4,801	2,729	14,758	16,724	5,419	4,099	2,943	1,600	3,708	3,992	6,842	18,001
27.....	4,118	3,256	15,922	23,919	7,079	4,306	3,663	2,100	4,726	5,441	7,911	16,624
28.....	3,717	1,875	18,785	22,237	7,859	3,453	3,166	1,782	4,456	10,043	8,199	16,946
29.....	5,262	.....	22,462	23,128	8,354	3,463	2,847	1,648	5,223	24,231	6,693	17,028
30.....	4,861	.....	29,635	22,610	7,320	4,258	2,801	1,607	9,374	22,847	6,590	16,228
31.....	4,309	.....	33,582	.....	7,826	.....	2,427	1,592	.....	18,019	.....	17,721
Mean..	7,348	3,379	8,883	15,786	13,451	5,127	3,845	1,783	4,762	9,410	13,939	11,744

**Monthly discharge, in second-feet, of HUDSON RIVER AT DAM OF ADIRONDACK ELECTRIC  
POWER CORPORATION (LOWER DAM), MECHANICVILLE**

[Drainage area, 4,570 square miles]

1907	DISCHARGE IN SECOND-FEET				RUN-OFF
	Maximum	Minimum	Mean	Per square mile	
January.....	13,369	3,717	7,348	1.608	1.85
February.....	5,067	1,875	3,379	0.740	0.77
March.....	33,582	*844	8,883	1.944	2.24
April.....	34,121	*5,697	15,786	3.454	3.95
May.....	23,108	*5,419	13,451	2.943	3.39
June.....	7,305	2,519	5,127	1.122	1.26
July.....	7,558	*1,793	3,845	0.841	0.97
August.....	3,152	947	1,783	0.390	0.45
September.....	10,742	*1,053	4,762	1.042	1.16
October.....	24,231	*3,856	9,410	2.059	2.37
November.....	29,736	6,590	13,939	3.050	3.40
December.....	22,722	3,344	11,744	2.570	2.96
The year.....	34,121	*844	8,311	1.819	24.67

\* Sunday.

NOTE.—Above tables supersede those published in Report of State Engineer for 1910, pages 625 and 629. For list of changes see page 258.

**Daily discharge, in second-feet, of HUDSON RIVER AT DAM OF ADIRONDACK ELECTRIC  
POWER CORPORATION (LOWER DAM), MECHANICVILLE**

1908	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1. ....	17,225	3,820	6,810	29,896	26,655	8,874	2,836	1,926	1,850	926	1,368	3,611
2. ....	16,973	3,137	6,501	26,882	27,733	7,167	2,205	1,131	1,661	1,727	2,156	3,096
3. ....	14,980	4,120	7,303	25,805	27,432	6,738	1,245	1,714	1,244	1,859	2,623	2,929
4. ....	12,845	4,150	9,732	21,547	28,237	6,139	889	2,169	1,254	472	1,281	2,268
5. ....	9,997	3,659	8,978	18,512	24,514	5,557	1,731	1,572	.903	2,072	1,825	1,814
6. ....	13,790	4,417	6,867	18,358	22,712	4,408	2,682	1,592	343	1,607	1,714	355
7. ....	8,042	3,987	6,873	17,268	21,948	4,059	3,408	2,322	911	1,368	1,718	3,063
8. ....	7,313	4,138	6,566	18,892	23,580	5,334	2,425	2,597	1,210	1,819	795	2,626
9. ....	8,286	4,272	8,632	26,695	26,150	5,093	2,673	1,377	1,090	1,717	1,739	2,512
10. ....	7,683	3,046	8,104	27,928	24,301	4,485	2,445	3,042	1,582	1,285	1,598	2,512
11. ....	6,583	4,435	6,680	27,837	25,075	4,484	1,647	1,814	1,425	715	1,607	2,279
12. ....	6,073	3,294	8,510	28,555	20,699	4,828	1,853	1,941	1,077	1,284	1,613	2,270
13. ....	10,215	4,033	12,157	27,934	18,711	3,757	2,148	1,820	945	712	1,731	808
14. ....	8,946	4,507	18,956	25,648	18,473	2,246	3,989	1,130	372	1,274	931	3,075
15. ....	7,270	14,813	15,225	23,807	18,215	3,391	2,474	1,779	1,632	934	686	2,597
16. ....	7,136	23,945	17,517	23,458	17,434	6,557	1,602	1,026	1,295	1,160	2,733	3,063
17. ....	6,404	16,706	14,043	21,556	16,121	4,730	2,152	2,165	920	1,274	3,932	1,837
18. ....	6,538	16,142	12,317	20,099	16,443	3,838	1,926	2,382	1,276	354	2,170	2,601
19. ....	5,339	14,560	11,807	20,583	12,966	4,195	1,575	2,422	804	1,651	2,927	2,896
20. ....	5,987	13,281	11,332	21,091	13,582	3,811	1,893	2,596	912	1,254	1,811	1,142
21. ....	6,173	12,151	11,199	20,341	12,879	1,820	2,642	2,454	672	1,276	1,705	2,159
22. ....	6,410	12,222	9,983	19,221	11,684	2,778	3,088	1,840	685	920	1,392	2,150
23. ....	6,004	11,204	11,167	18,926	11,364	4,328	3,116	1,723	350	1,253	2,156	1,683
24. ....	5,602	9,678	15,374	17,222	13,929	4,430	2,554	1,448	929	1,260	2,692	1,796
25. ....	5,804	8,774	17,565	20,019	12,365	2,780	2,492	2,254	920	819	2,238	1,848
26. ....	4,531	7,678	15,473	22,665	8,823	3,625	2,982	2,239	1,268	1,290	1,815	1,483
27. ....	3,299	8,928	18,567	24,691	9,452	2,357	3,118	2,197	811	1,708	1,815	1,594
28. ....	5,382	11,629	23,293	27,800	8,239	1,347	2,339	2,422	1,265	1,598	3,843	1,604
29. ....	3,709	8,815	29,897	27,494	7,962	2,466	1,749	1,320	1,631	3,603	1,693	1,714
30. ....	4,967	.....	32,265	28,601	7,016	2,377	2,625	1,970	1,271	2,248	4,053	1,606
31. ....	4,747	.....	31,740	.....	7,494	.....	2,241	1,499	.....	2,600	.....	2,158
Mean....	7,879	8,467	13,595	23,311	17,490	4,266	2,346	1,931	1,083	1,423	2,012	2,165

**Monthly discharge, in second-feet, of HUDSON RIVER AT DAM OF ADIRONDACK ELECTRIC  
POWER CORPORATION (LOWER DAM), MECHANICVILLE**  
[Drainage area, 4,570 square miles]

1908	DISCHARGE IN SECOND-FEET				Run-off Depth in inches on drainage area
	Maximum	Minimum	Mean	Per square mile	
January .....	17,225	3,299	7,879	1.72	1.93
February .....	23,945	3,046	8,467	1.85	2.00
March .....	32,265	6,501	13,595	2.98	3.43
April .....	29,896	17,222	23,311	5.10	5.69
May .....	28,237	7,016	17,490	3.83	4.41
June .....	8,874	*1,347	4,266	0.933	1.04
July .....	3,989	889	2,346	0.513	0.59
August .....	3,042	*1,026	1,931	0.423	0.48
September .....	1,850	*343	1,083	0.237	0.27
October .....	3,603	*354	1,423	0.311	0.36
November .....	4,053	*686	2,012	0.440	0.49
December .....	3,611	*355	2,165	0.474	0.55
The year .....	32,265	*343	7,151	1.57	21.30

\* Sunday.

Nors.—Above tables supersede those published in Report of State Engineer for 1910, pages 626 and 629. For list of changes see page 258.



**Daily discharge, in second-feet, of HUDSON RIVER AT DAM OF ADIRONDACK ELECTRIC  
POWER CORPORATION (LOWER DAM), MECHANICVILLE**

1909	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	1,717	6,129	19,050	15,869	21,607	7,380	3,190	790	1,259	1,957	1,763	2,555
2.....	1,613	5,564	15,987	14,410	21,977	7,328	3,380	1,809	1,377	1,643	1,674	3,002
3.....	839	5,116	14,517	15,825	23,970	6,332	3,013	902	1,727	1,977	1,656	2,548
4.....	1,714	4,840	13,444	15,818	25,351	6,596	1,948	1,693	2,112	3,234	1,564	1,780
5.....	2,641	4,603	11,799	18,448	25,001	5,819	1,911	2,189	778	2,380	1,591	1,341
6.....	13,187	11,505	9,759	19,809	24,362	5,822	3,960	905	1,651	2,300	1,681	2,688
7.....	8,968	10,884	7,878	25,393	21,823	8,262	3,330	1,346	1,216	1,865	1,024	2,870
8.....	6,777	9,707	7,919	34,007	22,908	8,362	2,359	342	1,513	1,591	1,712	3,409
9.....	4,740	9,096	7,279	36,662	23,626	7,461	2,950	1,712	1,666	1,574	1,714	2,665
10.....	8,020	7,583	6,636	33,759	22,741	7,259	2,744	2,053	1,728	1,174	2,247	3,094
11.....	8,190	9,216	10,850	27,703	25,086	6,978	1,884	1,718	1,920	1,890	1,576	2,953
12.....	5,855	8,146	10,855	25,509	27,409	8,334	1,689	2,130	1,256	1,450	2,044	1,362
13.....	5,820	8,744	9,000	22,756	31,138	5,987	1,999	1,376	1,623	1,150	1,708	2,656
14.....	4,004	8,074	7,760	27,752	24,547	7,867	2,103	1,248	1,497	1,463	1,237	3,391
15.....	4,075	8,559	8,743	40,668	22,266	7,460	1,696	454	1,617	1,454	2,497	3,035
16.....	2,993	9,350	8,519	46,458	18,759	7,006	2,156	1,378	1,673	1,460	2,260	3,184
17.....	2,930	8,917	7,349	45,508	20,246	6,144	1,753	1,822	1,466	599	1,420	2,905
18.....	3,435	8,903	6,018	41,041	19,200	6,471	1,318	2,615	1,707	1,353	1,584	2,163
19.....	3,400	7,875	6,233	37,339	19,203	7,093	897	3,030	856	1,568	1,189	1,047
20.....	2,990	43,083	6,789	34,987	17,957	7,246	1,707	2,938	1,614	1,801	1,538	2,982
21.....	2,998	28,341	5,166	35,346	16,351	7,875	2,257	3,900	1,270	1,794	1,309	2,611
22.....	3,129	21,979	7,001	34,131	15,503	5,401	2,616	912	1,172	1,755	2,231	2,516
23.....	3,126	20,515	6,598	30,772	14,984	5,352	2,540	2,758	1,491	1,327	2,616	2,588
24.....	4,011	20,913	6,517	29,086	13,621	4,900	2,163	2,440	2,020	791	1,840	2,296
25.....	11,896	30,890	9,122	23,834	12,228	4,660	1,259	2,074	1,690	1,124	1,672	919
26.....	11,476	26,778	15,582	22,511	10,297	4,408	1,745	1,492	743	1,232	1,585	682
27.....	10,868	21,056	13,537	21,789	9,138	3,689	3,100	1,348	1,588	2,624	2,613	2,023
28.....	10,575	19,230	14,373	20,041	8,587	4,523	2,116	1,236	1,177	2,151	2,027	2,068
29.....	8,957	.....	16,184	21,137	8,236	4,620	2,331	24	1,475	2,680	3,586	2,127
30.....	9,837	.....	15,129	19,419	8,946	3,181	2,111	1,248	2,439	1,329	3,096	2,118
31.....	8,292	.....	14,295	.....	9,709	.....	1,364	1,357	.....	1,609	.....	2,031
Mean...	5,744	13,754	10,804	27,911	18,930	6,328	2,246	1,622	1,511	1,697	1,675	2,374

**Monthly discharge, in second-feet, of HUDSON RIVER AT DAM OF ADIRONDACK ELECTRIC  
POWER CORPORATION (LOWER DAM), MECHANICVILLE**

[Drainage area, 4,570 square miles]

1909	DISCHARGE IN SECOND-FEET				RUN-OFF Depth in inches on drainage area
	Maximum	Minimum	Mean	Per square mile	
January.....	13,187	*839	5,744	1,257	1.45
February.....	43,083	4,603	13,754	3,010	3.12
March.....	19,050	*5,166	10,304	2,255	2.60
April.....	46,458	14,410	27,911	6,107	6.81
May.....	31,138	8,236	18,930	4,142	4.77
June.....	8,362	3,181	6,328	1,385	1.55
July.....	3,960	897	2,246	0.491	0.57
August.....	8,030	*24	1,622	0.355	0.41
September.....	2,439	*743	1,511	0.331	0.37
October.....	3,234	*791	1,697	0.371	0.43
November.....	3,586	*1,024	1,875	0.410	0.46
December.....	3,409	*682	2,374	0.519	0.60
The year.....	46,458	*24	7,792	1.71	23.14

\* Sunday.

NOTE.—Above tables supersede those published in report of State Engineer for 1910, pages 626 and 630. For list of changes, see page 258.

**Daily discharge, in second-feet, of HUDSON RIVER AT DAM OF ADIRONDACK ELECTRIC  
POWER CORPORATION (LOWER DAM), MECHANICVILLE**

1910	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	1,720	5,791	32,846	35,809	13,946	16,851	4,259	1,811	1,673	5,161	3,798	4,145
2.....	910	4,532	32,393	35,739	12,845	16,857	4,543	2,239	1,600	2,815	4,185	3,170
3.....	1,387	4,488	30,440	34,342	13,604	14,768	2,212	1,677	1,567	4,078	5,002	3,017
4.....	1,252	4,190	30,429	30,071	12,182	12,467	1,650	1,958	924	3,466	4,574	2,093
5.....	2,215	4,442	30,051	25,854	14,477	10,423	8,354	2,656	2,134	2,964	4,286	3,102
6.....	2,119	3,437	26,976	23,629	13,916	13,743	2,879	3,218	2,986	2,555	2,958	3,906
7.....	2,960	4,079	30,135	23,302	12,343	17,789	2,202	2,460	2,587	3,210	7,401	3,782
8.....	2,677	4,295	29,471	23,313	10,251	18,401	2,186	3,388	3,311	2,172	5,691	3,611
9.....	1,793	4,096	25,132	22,969	12,096	17,813	2,187	3,058	3,070	1,377	4,710	2,976
10.....	3,083	3,334	22,977	19,039	11,043	16,829	1,799	2,670	3,437	3,145	4,610	2,640
11.....	3,543	3,304	20,365	16,686	10,372	15,320	2,479	2,748	1,788	3,171	4,951	1,142
12.....	3,022	3,253	19,998	14,751	9,755	16,033	1,702	2,120	4,224	3,165	3,837	1,811
13.....	3,079	2,649	18,262	14,190	8,679	15,891	2,105	2,452	2,903	2,560	2,557	1,974
14.....	3,981	4,480	18,115	13,176	7,667	14,998	1,736	2,859	2,414	3,057	4,941	1,890
15.....	2,597	4,472	16,076	10,510	6,104	13,142	1,724	3,360	2,836	2,778	4,505	1,984
16.....	2,101	4,258	14,012	10,097	8,015	11,741	1,579	2,903	3,135	1,790	4,467	1,989
17.....	3,074	3,750	13,420	9,485	6,910	11,059	930	2,544	2,295	3,084	4,251	2,114
18.....	2,912	4,473	11,836	11,546	6,369	10,931	1,763	2,218	474	2,518	4,167	684
19.....	4,544	3,973	10,844	12,105	6,555	10,443	2,125	2,641	2,540	2,013	3,310	2,028
20.....	4,210	2,178	11,255	14,890	6,539	11,275	1,826	2,530	2,722	2,355	1,728	2,120
21.....	3,496	2,160	13,497	19,507	6,728	9,265	1,619	1,237	2,126	1,795	4,234	2,133
22.....	29,826	7,048	13,463	15,559	5,737	8,531	1,802	2,611	2,090	2,422	2,905	2,531
23.....	17,087	6,522	14,716	13,285	9,449	7,757	1,589	2,517	2,003	1,369	3,325	2,090
24.....	13,848	5,757	15,952	14,474	8,247	6,953	1,775	1,866	1,588	2,421	2,646	2,116
25.....	11,562	6,067	19,851	12,821	8,176	4,230	2,165	1,671	1,132	3,639	3,702	1,133
26.....	10,308	5,067	28,408	11,953	12,450	2,810	1,400	1,548	1,982	2,847	3,849	2,639
27.....	9,991	4,953	29,586	16,321	15,639	5,756	2,242	2,119	1,902	3,202	2,154	3,444
28.....	9,498	33,296	28,800	18,553	15,076	6,055	1,588	884	2,795	3,296	4,048	3,455
29.....	7,213	.....	28,139	15,292	12,903	4,641	1,819	1,308	5,738	3,441	4,356	4,002
30.....	8,548	.....	30,649	12,753	18,316	8,888	1,694	1,146	7,190	3,285	4,117	4,181
31.....	7,740	.....	33,060	.....	17,123	.....	929	1,400	.....	4,950	.....	4,838
Mean...	5,879	5,870	22,630	18,867	10,594	11,539	2,066	2,252	2,572	2,893	4,042	2,669

NOTE.—August 31, estimated.

**Monthly discharge, in second-feet, of HUDSON RIVER AT DAM OF ADIRONDACK ELECTRIC  
POWER CORPORATION (LOWER DAM), MECHANICVILLE**

[Drainage area, 4,570 square miles]

1910	DISCHARGE IN SECOND-FEET				Run-off Depth in inches on drainage area
	Maximum	Minimum	Mean	Per square mile	
January.....	29,826	*910	5,879	1.286	1.46
February.....	23,296	2,160	5,370	1.175	1.22
March.....	38,680	10,844	22,630	4.952	5.71
April.....	35,739	*9,485	18,367	4.019	4.46
May.....	17,123	5,737	10,594	2.318	2.67
June.....	18,401	*2,310	11,539	2.525	2.82
July.....	4,543	*929	2,066	0.452	0.52
August.....	8,386	*884	2,252	0.493	0.57
September.....	7,190	*474	2,572	0.563	0.63
October.....	5,161	*1,369	2,893	0.633	0.73
November.....	7,401	*1,728	4,042	0.884	0.99
December.....	4,838	*684	2,669	0.584	0.67
The year.....	25,729	*474	7,574	1.66	22.50

\* Sunday.

NOTE.—Above tables supersede those published in Report of State Engineer for 1910, pages 627 and 630. For list of changes see page 258.

**Daily discharge, in second-feet, of HUDSON RIVER at DAM of ADIRONDACK ELECTRIC  
POWER CORPORATION (LOWER DAM), MECHANICVILLE**

1911	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	2,585	4,386	5,435	11,127	23,046	3,489	2,901	2,550	3,033	1,163	7,305	10,249
2.....	6,279	4,413	4,146	8,814	24,931	3,713	2,112	1,713	1,493	1,935	7,263	9,258
3.....	13,241	4,515	4,008	10,126	26,801	4,223	2,075	1,651	1,614	4,487	6,389	7,059
4.....	13,439	3,360	4,121	8,764	25,268	2,935	1,864	1,860	2,192	3,921	6,691	9,102
5.....	10,114	3,639	2,124	8,945	20,757	4,695	1,384	1,111	1,962	5,122	4,626	6,013
6.....	8,125	4,525	4,273	15,424	16,955	3,742	2,040	1,211	2,293	5,255	7,194	5,610
7.....	8,014	4,589	4,015	18,897	13,624	3,739	1,886	1,001	1,737	6,443	6,231	5,279
8.....	5,662	4,823	3,012	19,920	14,443	4,800	1,275	1,979	2,400	4,167	8,387	5,655
9.....	7,455	4,067	2,829	18,058	10,059	5,843	1,695	1,549	2,080	7,083	9,138	5,606
10.....	5,605	3,977	2,823	18,336	10,629	6,292	857	1,741	2,447	6,560	10,097	3,725
11.....	5,069	4,130	2,910	17,390	9,997	4,108	1,871	1,618	6,165	5,269	9,317	6,829
12.....	5,699	3,045	1,781	17,546	9,553	5,960	2,030	1,253	4,836	4,836	7,614	7,446
13.....	5,983	4,085	3,855	17,225	8,586	5,902	1,583	886	3,189	5,050	11,450	8,870
14.....	4,438	3,249	4,250	18,192	6,937	7,610	1,579	1,432	3,731	5,276	10,591	11,959
15.....	4,315	2,654	4,896	23,457	8,569	9,184	1,180	1,380	3,841	2,798	11,548	13,500
16.....	4,730	3,480	5,003	26,053	5,283	9,009	1,256	1,762	4,285	4,738	9,856	12,998
17.....	4,602	3,391	5,597	25,273	5,749	8,598	1,630	1,574	1,314	3,711	8,895	13,498
18.....	4,164	3,678	4,413	23,047	5,312	5,705	1,952	1,544	3,051	4,981	8,146	14,024
19.....	4,440	2,392	2,428	20,878	5,899	6,823	1,662	1,568	2,818	10,893	12,013	12,541
20.....	3,568	4,110	4,775	18,867	6,125	5,356	1,973	1,331	2,376	17,654	13,449	11,240
21.....	4,045	4,003	4,816	18,532	3,502	4,932	1,729	1,142	2,135	14,904	12,865	9,673
22.....	3,351	2,648	4,872	17,850	5,989	4,068	1,675	1,139	2,470	12,799	11,290	9,244
23.....	3,012	4,033	7,858	17,230	4,577	4,046	1,009	1,103	2,444	16,277	10,088	13,028
24.....	4,088	3,781	9,865	16,891	3,981	3,257	1,614	928	1,733	15,029	9,596	17,539
25.....	3,410	2,847	6,319	16,561	5,184	2,055	1,928	1,444	1,546	14,215	8,531	19,001
26.....	2,969	2,126	4,179	17,222	5,282	3,844	1,861	1,464	1,942	12,387	6,765	17,571
27.....	3,924	6,829	12,437	19,526	5,477	3,783	1,751	772	1,717	12,057	9,810	18,085
28.....	11,102	6,212	19,933	21,225	3,573	2,835	1,958	1,291	2,441	9,897	7,650	16,127
29.....	7,640	.....	14,178	22,874	5,926	2,341	1,687	1,850	1,930	7,735	7,427	14,038
30.....	6,550	.....	14,540	23,215	3,883	847	590	2,120	1,719	10,069	9,796	10,211
31.....	5,542	.....	13,153	.....	3,651	.....	1,126	2,125	.....	8,061	.....	9,304
Mean..	5,908	3,895	6,122	17,915	9,985	4,791	1,675	1,487	2,565	7,898	8,999	10,783

**Monthly discharge, in second-feet, of HUDSON RIVER at DAM of ADIRONDACK ELECTRIC  
POWER CORPORATION (LOWER DAM), MECHANICVILLE**

[Drainage area, 4,570 square miles]

1911	DISCHARGE IN SECOND-FEET				RUN-OFF
	Maximum	Minimum	Mean	Per square mile	Depth in inches on drainage area
January.....	13,439	*2,585	5,908	1.29	1.49
February.....	6,829	*2,126	3,895	0.852	0.89
March.....	19,933	*1,781	6,122	1.34	1.54
April.....	26,053	8,764	17,915	3.92	4.37
May.....	26,801	*3,502	9,985	2.18	2.52
June.....	9,184	847	4,791	1.05	1.17
July.....	2,901	*590	1,675	0.366	0.42
August.....	2,550	*772	1,487	0.325	0.38
September.....	6,165	*1,344	2,565	0.561	0.63
October.....	17,654	*1,163	7,898	1.73	1.99
November.....	13,449	*4,626	8,999	1.97	2.20
December.....	19,001	*3,725	10,783	2.36	2.72
The year.....	26,801	*590	6,841	1.50	20.32

\* Sunday.

NOTE.—Above tables supersede those published in Report of State Engineer for 1911, Vol. II, page 234. For list of changes see page 258.

**Daily discharge, in second-feet, of HUDSON RIVER AT DAM OF ADIRONDACK ELECTRIC  
POWER CORPORATION (LOWER DAM), MECHANICVILLE**

1912	Jan.	Feb	Mar.	Apr	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	10,483	4,403	3,720	20,121	18,683	15,936	2,021	1,571	1,131	3,828	8,312	4,266
2.....	9,413	3,788	4,491	22,318	17,023	12,910	2,352	1,484	1,350	3,438	7,977	6,033
3.....	8,297	4,551	2,770	21,937	15,322	14,350	1,642	1,588	1,647	3,040	6,413	8,045
4.....	5,604	3,010	3,887	19,484	13,967	12,247	1,218	1,124	1,955	2,925	8,402	13,098
5.....	6,527	4,514	3,734	20,208	9,791	10,549	1,239	1,118	2,379	3,054	7,411	13,463
6.....	5,235	4,961	2,885	23,740	13,004	9,215	2,374	1,567	2,917	1,630	6,934	14,551
7.....	4,162	4,464	2,877	27,880	11,883	8,127	1,108	1,573	2,497	2,901	6,752	14,641
8.....	5,558	4,280	3,028	40,470	12,695	9,007	1,519	1,865	2,203	3,175	14,673	13,540
9.....	5,492	3,714	4,169	35,970	10,636	6,261	2,544	1,673	1,945	2,376	18,065	13,870
10.....	5,332	3,586	3,669	32,973	11,774	6,752	2,059	1,693	3,207	2,238	19,244	11,975
11.....	4,681	2,585	4,050	27,635	9,756	6,026	1,947	1,480	2,196	2,129	17,912	11,022
12.....	5,297	2,960	4,628	21,132	9,193	5,386	2,074	1,733	2,083	2,836	15,883	9,843
13.....	5,584	3,984	17,175	20,528	9,598	5,046	1,741	2,586	2,184	1,584	14,675	8,676
14.....	4,081	3,252	11,572	20,528	10,109	4,958	1,173	2,017	1,664	2,582	13,749	6,380
15.....	4,393	3,189	11,323	21,680	11,596	4,886	1,874	1,779	1,534	2,830	14,505	4,963
16.....	4,026	3,028	27,323	24,365	11,164	3,034	2,160	2,082	3,980	2,800	14,254	6,486
17.....	4,146	2,800	16,926	30,313	14,139	4,968	1,694	2,041	5,285	4,043	11,966	5,563
18.....	3,457	2,757	17,577	34,006	13,749	4,176	1,806	1,220	4,185	3,554	12,838	5,446
19.....	4,650	3,136	17,257	36,048	12,998	4,696	1,850	1,653	5,021	3,964	11,371	6,674
20.....	4,994	3,798	18,640	36,020	13,143	3,891	1,265	1,950	5,227	2,992	9,695	8,074
21.....	3,807	4,665	14,648	34,310	13,479	4,104	1,506	1,682	5,134	3,538	8,790	8,445
22.....	6,110	3,917	12,550	29,489	17,207	3,375	1,813	1,878	3,619	3,518	8,333	5,988
23.....	5,286	4,156	11,089	27,120	19,621	2,511	2,466	2,086	4,447	7,429	7,661	8,092
24.....	5,630	5,466	10,220	30,376	17,998	3,617	2,496	2,158	4,223	11,704	5,400	6,700
25.....	4,843	4,081	10,357	29,489	18,240	4,140	1,877	1,359	3,522	20,601	8,410	4,808
26.....	5,134	5,384	8,233	24,819	15,873	2,778	2,742	1,151	2,689	19,348	8,328	6,354
27.....	4,744	7,191	7,975	20,511	15,277	2,226	2,124	2,531	3,207	16,256	7,683	5,758
28.....	2,789	4,610	7,976	20,474	12,844	2,603	1,213	2,212	4,043	16,109	6,532	4,838
29.....	4,519	4,547	15,980	21,284	11,705	2,227	1,133	1,570	3,029	12,636	6,318	3,422
30.....	4,989	.....	19,358	20,754	15,054	1,955	1,363	1,893	4,515	12,047	6,087	5,845
31.....	3,787	.....	17,661	.....	16,696	.....	1,581	1,738	.....	11,303	.....	10,400
Mean..	5,260	4,029	10,250	26,533	13,681	6,065	1,806	1,744	3,101	6,194	10,486	8,292

**Monthly discharge, in second-feet, of HUDSON RIVER AT DAM OF ADIRONDACK ELECTRIC  
POWER CORPORATION (LOWER DAM), MECHANICVILLE**

[Drainage area, 4,570 square miles]

1912	DISCHARGE IN SECOND-FEET				RUN-OFF Depth in inches on drainage area
	Maximum	Minimum	Mean	Per square mile	
January.....	10,483	*2,789	5,260	1.15	1.33
February.....	7,191	*2,585	4,029	0.882	0.95
March.....	27,323	*2,770	10,250	2.24	2.58
April.....	40,470	19,484	26,533	5.81	6.48
May.....	19,621	*9,193	13,681	2.99	3.45
June.....	15,936	*1,955	6,065	1.33	1.48
July.....	2,742	*1,108	1,806	0.395	0.46
August.....	2,586	*1,118	1,744	0.382	0.44
September.....	5,285	*1,131	3,101	0.679	0.76
October.....	20,601	*1,584	6,194	1.36	1.57
November.....	19,244	*5,400	10,486	2.29	2.56
December.....	14,641	*3,422	8,292	1.81	2.09
The year.....	40,470	*1,108	8,105	1.77	24.15

\* Sunday.

NOTE.—Above tables supersede those published in Report of State Engineer for 1912, Vol. II, page 199. For list of changes see page 258.

**Daily discharge, in second-feet, of HUDSON RIVER AT DAM OF ADIRONDACK ELECTRIC  
POWER CORPORATION (LOWER DAM), MECHANICVILLE**

1913	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	10,060	11,476	8,475	38,210	11,569	14,016	3,079	1,801	1,326	1,996	5,820	4,924
2.....	9,995	10,878	5,617	33,798	10,837	13,103	2,827	1,648	995	2,266	4,401	4,883
3.....	10,885	12,104	7,182	28,016	10,506	12,668	1,757	1,550	1,133	1,218	5,748	5,127
4.....	13,748	8,448	5,526	24,801	9,072	10,728	1,438	1,848	1,600	1,221	4,422	4,784
5.....	12,302	7,612	5,028	24,516	9,812	9,076	1,823	1,550	1,168	1,146	4,146	4,858
6.....	13,619	6,824	4,986	26,464	6,543	7,963	1,476	1,879	1,607	1,513	2,942	4,361
7.....	13,600	6,557	5,537	25,758	7,472	6,862	2,017	1,711	1,192	1,796	3,631	4,329
8.....	17,964	5,568	4,049	22,577	6,163	5,463	1,776	1,549	1,333	1,969	3,010	8,909
9.....	17,510	4,088	2,982	19,991	7,095	6,857	2,169	1,355	1,333	1,492	1,986	10,365
10.....	15,558	6,768	8,434	17,344	6,111	5,711	2,214	1,400	1,430	1,600	12,420	9,994
11.....	14,658	5,608	10,220	17,135	5,287	4,457	1,745	1,373	688	1,517	18,375	6,424
12.....	15,719	4,575	9,926	19,957	5,244	4,532	2,011	1,417	853	1,754	16,890	7,946
13.....	14,442	4,347	9,152	19,116	4,338	4,914	1,025	1,181	663	1,800	14,901	5,526
14.....	14,435	4,093	11,808	18,016	5,025	3,353	1,517	1,263	883	1,985	12,952	5,965
15.....	11,299	4,134	24,015	16,866	5,176	2,616	1,651	1,535	1,007	2,275	10,721	8,056
16.....	11,582	3,177	21,210	16,821	5,184	3,585	1,957	1,219	1,151	1,648	8,264	7,216
17.....	13,660	5,387	20,140	15,407	4,765	4,095	2,210	1,244	920	1,567	8,206	5,894
18.....	17,891	5,208	18,759	15,586	4,786	3,297	1,578	1,353	1,240	1,575	6,814	6,202
19.....	20,309	4,522	18,205	15,015	5,610	3,420	1,914	1,136	1,392	1,555	5,879	6,586
20.....	21,514	4,087	19,828	13,612	4,723	3,803	1,482	1,385	1,238	1,619	6,206	5,241
21.....	22,793	3,903	22,449	18,585	4,717	3,045	1,469	1,504	1,472	2,283	6,650	3,685
22.....	23,114	4,560	25,494	13,257	4,607	2,183	1,375	1,240	1,209	3,476	8,315	5,149
23.....	21,911	5,044	24,283	12,385	6,672	2,956	1,452	1,023	1,553	3,116	7,163	5,729
24.....	21,911	8,603	24,923	11,938	11,534	3,357	1,670	793	1,825	3,905	8,167	5,173
25.....	19,756	6,930	29,274	11,418	11,802	3,138	1,926	1,014	3,159	4,405	6,669	4,088
26.....	18,104	5,844	42,688	11,173	12,212	3,280	1,868	1,214	2,051	5,188	6,469	3,829
27.....	18,471	5,745	74,326	11,017	11,161	3,260	744	1,112	2,094	7,153	5,342	5,867
28.....	16,057	6,716	90,000	11,552	11,314	3,539	1,813	1,042	1,580	9,950	5,147	4,160
29.....	13,750	66,243	12,963	15,992	1,889	1,011	1,298	1,608	8,270	4,523	3,203	
30.....	11,319	65,809	11,768	15,572	2,294	1,893	986	1,284	7,569	3,736	4,041	
31.....	10,768	41,663	15,482	15,482	1,707	1,075	1,075	1,075	6,962	4,005		
Mean.....	15,765	6,171	23,491	18,335	8,254	5,298	1,745	1,339	1,866	8,090	7,330	5,659

NOTE.— January 7 and 29, estimated.

**Monthly discharge, in second-feet, of HUDSON RIVER AT DAM OF ADIRONDACK ELECTRIC  
POWER CORPORATION (LOWER DAM), MECHANICVILLE**  
[Drainage area, 4,570 square miles]

1913	DISCHARGE IN SECOND-FEET				RUN-OFF Depth in inches on drainage area
	Maximum	Minimum	Mean	Per square mile	
January.....	23,114	9,995	15,765	3.45	3.98
February.....	12,104	*2,177	6,171	1.35	1.41
March.....	90,000	*2,982	23,491	5.14	5.98
April.....	36,210	*11,017	18,335	4.01	4.48
May.....	15,992	4,338	8,254	1.81	2.00
June.....	14,016	*1,899	5,298	1.16	1.29
July.....	8,079	*744	1,745	0.382	0.44
August.....	1,879	*793	1,339	0.293	0.24
September.....	3,150	663	1,366	0.299	0.33
October.....	9,950	*1,146	3,090	0.676	0.78
November.....	18,375	*1,986	7,330	1.60	1.78
December.....	10,365	2,203	5,659	1.24	1.43
The year.....	90,000	663	8,171	1.79	24.27

\*Sunday.

NOTE.— Above tables supersede those published in Report of State Engineer for 1913, Vol. II, page 211. For list of changes see page 258.

## Daily discharge, in second-feet, of HUDSON RIVER AT DAM OF ADIRONDACK ELECTRIC POWER CORPORATION (LOWER DAM), MECHANICVILLE

1914	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	3,523	6,904	2,182	26,840	35,801	6,491	2,303	1,607	5,488	1,754	786	4,285
2.....	3,506	6,526	3,097	35,338	31,542	3,964	4,779	1,732	4,091	1,465	1,454	4,059
3.....	2,853	5,826	8,581	81,180	28,085	4,032	6,130	2,107	3,094	1,399	1,702	5,180
4.....	1,858	6,529	5,935	98,042	24,210	4,303	2,718	1,735	2,525	1,497	1,182	7,393
5.....	2,082	6,569	5,267	26,708	23,660	3,551	2,402	1,456	3,302	1,519	1,199	6,674
6.....	3,406	6,273	4,394	32,936	24,267	3,182	2,589	1,411	2,418	1,565	1,925	4,953
7.....	3,241	5,115	3,934	21,004	22,548	2,608	3,259	1,505	2,501	2,297	1,290	5,457
8.....	3,714	3,341	3,237	28,321	21,305	3,854	3,387	1,453	2,302	1,602	1,019	4,943
9.....	3,915	4,809	4,282	41,132	17,819	3,887	3,088	999	3,091	1,152	1,381	5,258
10.....	2,576	5,814	3,947	35,689	16,089	3,214	3,079	1,684	2,232	1,202	1,599	4,194
11.....	3,253	4,722	3,852	32,487	15,936	3,341	3,246	1,894	2,243	1,182	1,846	3,346
12.....	3,927	3,658	3,477	30,989	13,470	2,891	2,403	1,853	1,279	1,246	1,662	3,131
13.....	3,592	2,806	3,563	29,197	16,478	2,560	3,161	1,633	1,522	1,574	1,427	2,058
14.....	3,291	2,465	2,780	26,754	15,363	1,971	3,810	1,608	1,741	1,498	1,644	2,398
15.....	2,698	2,115	2,785	26,030	15,100	3,532	4,068	1,597	2,368	1,234	2,138	2,078
16.....	2,638	2,922	4,116	26,412	12,765	3,447	3,404	1,181	2,122	1,944	1,846	2,508
17.....	1,919	2,540	10,087	25,082	12,592	3,269	3,620	1,602	1,791	1,644	3,757	2,018
18.....	1,231	2,366	9,979	25,156	11,687	1,632	2,317	1,457	1,677	1,198	6,673	1,615
19.....	2,941	3,306	8,395	31,348	11,469	2,318	1,686	1,947	1,514	1,413	5,519	2,070
20.....	2,799	2,834	6,414	48,394	9,519	2,942	2,176	1,923	1,241	1,896	3,497	1,489
21.....	3,190	2,766	5,076	58,656	8,424	1,674	2,612	1,579	2,071	1,991	3,088	1,604
22.....	3,011	2,004	4,679	55,319	9,116	3,315	2,167	2,352	2,262	1,882	2,968	2,507
23.....	3,190	2,680	5,406	47,094	6,562	2,908	2,007	1,904	2,159	1,977	4,191	2,284
24.....	2,552	2,681	5,609	39,843	5,474	2,381	1,322	3,151	1,971	1,782	3,093	1,649
25.....	2,640	2,086	6,089	33,433	8,253	1,928	1,664	2,335	1,943	892	2,340	1,507
26.....	5,012	2,177	14,709	33,326	6,440	2,053	1,645	2,380	1,866	1,420	2,329	2,444
27.....	4,085	2,384	20,967	33,080	6,065	1,267	2,076	1,790	1,109	2,312	2,037	1,423
28.....	4,557	2,753	28,223	32,775	7,007	1,430	2,046	2,676	2,413	1,494	3,194	1,049
29.....	4,987	.....	24,195	33,646	6,842	2,270	1,707	2,819	2,546	2,292	3,381	2,281
30.....	6,633	.....	23,989	35,945	5,631	2,013	1,636	3,341	1,631	1,618	5,246	2,034
31.....	7,394	.....	24,167	.....	4,210	.....	1,818	6,953	.....	1,475	.....	1,706
Mean...	3,425	3,810	8,497	33,405	14,636	2,939	2,720	2,054	2,283	1,593	2,515	3,087

## Monthly discharge, in second-feet, of HUDSON RIVER AT DAM OF ADIRONDACK ELECTRIC POWER CORPORATION (LOWER DAM), MECHANICVILLE

[Drainage area, 4,570 square miles]

1914	DISCHARGE IN SECOND-FEET				RUN-OFF Depth in inches on drainage area
	Maximum	Minimum	Mean	Per square mile	
January.....	7,394	*1,231	3,425	0.749	0.86
February.....	6,904	*2,004	3,810	0.834	0.87
March.....	28,223	*2,182	8,497	1.86	2.14
April.....	58,656	21,004	33,405	7.31	8.16
May.....	35,801	*4,210	14,636	3.20	3.69
June.....	6,491	1,267	2,939	0.643	0.72
July.....	6,130	1,322	2,720	0.595	0.69
August.....	6,953	*999	2,054	0.449	0.52
September.....	5,488	*1,109	2,283	0.500	0.56
October.....	2,312	*892	1,593	0.349	0.40
November.....	6,673	*786	2,515	0.550	0.61
December.....	7,393	1,049	3,087	0.675	0.78
The year.....	58,655	*786	6,732	1.47	20.00

\* Sunday.

NOTE.—Above tables are the same as those published in Report of State Engineer for 1914, Vol. II, page 219.

Daily discharge, in second-feet, of HUDSON RIVER AT DAM OF ADIRONDACK ELECTRIC POWER CORPORATION (LOWER DAM), MECHANICVILLE, for the year ending September 30, 1915

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1.....	1,754	786	4,285	1,751	4,579	22,597	5,516	7,770	3,420	2,412	5,461	6,383
2.....	1,465	1,454	4,059	1,875	3,736	19,703	5,883	8,271	3,663	6,379	6,244	6,558
3.....	1,399	1,702	5,180	1,810	3,948	18,355	5,279	8,652	2,990	8,656	6,516	5,789
4.....	1,479	1,182	7,393	2,185	4,584	14,107	4,912	9,106	2,981	8,182	7,284	5,190
5.....	1,519	1,199	6,674	1,733	4,577	12,162	6,096	7,649	2,299	7,576	9,769	3,798
6.....	1,565	1,925	4,953	2,584	4,870	10,600	5,902	8,289	1,692	8,490	11,240	4,002
7.....	2,297	1,290	5,457	11,000	7,648	9,687	5,956	7,876	1,664	8,331	9,906	3,907
8.....	1,602	1,019	4,943	7,318	8,683	8,650	6,744	6,881	1,574	9,859	10,237	4,288
9.....	1,152	1,381	5,256	7,290	5,880	8,149	7,909	4,925	1,994	22,715	10,464	4,859
10.....	1,202	1,599	4,194	8,779	5,185	7,443	10,119	6,332	2,272	23,161	10,615	4,295
11.....	1,182	1,846	3,346	7,473	4,964	6,845	21,405	5,323	2,107	18,408	9,894	4,856
12.....	1,246	1,662	3,131	6,836	4,794	6,112	28,482	4,782	1,734	20,198	8,561	2,768
13.....	1,574	1,427	2,058	7,038	4,228	5,565	28,952	4,691	1,616	15,711	7,539	2,478
14.....	1,498	1,644	2,398	6,202	3,865	6,025	27,119	4,221	2,329	12,901	6,844	5,434
15.....	1,234	2,158	2,078	6,367	21,419	7,122	23,647	3,864	1,893	12,691	5,363	4,752
16.....	1,944	1,846	2,508	5,345	20,086	6,759	20,511	4,999	1,739	10,619	5,925	4,869
17.....	1,644	3,757	2,018	7,467	13,425	6,687	18,836	4,835	2,725	7,857	6,629	5,014
18.....	1,198	6,673	1,615	15,820	10,744	6,453	17,769	3,688	3,478	6,546	5,862	4,894
19.....	1,413	5,519	2,070	16,571	9,153	6,291	15,074	4,400	3,461	7,431	5,034	2,999
20.....	1,896	3,497	1,489	15,337	8,404	5,667	13,387	4,533	2,268	6,986	4,277	4,302
21.....	1,991	3,088	1,604	13,813	7,665	5,655	12,212	4,153	2,299	5,976	4,371	5,374
22.....	1,862	2,988	2,507	13,086	8,148	6,798	12,513	4,531	2,974	5,792	3,363	5,084
23.....	1,977	4,191	2,284	12,935	8,029	6,528	11,345	3,609	2,783	5,225	7,002	5,389
24.....	1,782	3,093	1,649	12,138	13,689	6,527	9,159	5,182	2,858	5,167	14,837	5,298
25.....	892	2,340	1,597	11,136	34,712	7,119	8,482	4,633	3,516	4,067	15,303	4,216
26.....	1,420	2,329	2,444	9,323	48,723	7,727	15,492	4,059	2,516	5,625	15,089	3,111
27.....	2,312	2,037	1,423	8,345	25,522	6,929	9,698	4,499	1,852	7,652	13,724	4,253
28.....	1,494	3,194	1,049	7,614	24,426	6,129	7,597	4,635	1,673	7,860	11,744	4,838
29.....	2,292	3,381	2,281	7,107	.....	7,431	8,654	3,742	1,615	8,135	8,961	3,933
30.....	1,618	5,246	2,034	4,849	.....	6,548	7,488	3,441	1,772	7,233	9,296	4,682
31.....	1,475	.....	1,700	3,484	.....	5,785	.....	4,009	.....	6,811	7,884	.....
Mean...	1,593	2,515	3,087	7,889	11,632	8,650	12,738	5,406	2,392	9,505	8,557	4,587

Monthly discharge, in second-feet, of HUDSON RIVER AT DAM OF ADIRONDACK ELECTRIC POWER CORPORATION (LOWER DAM), MECHANICVILLE, for the year ending September 30, 1915

[Drainage area, 4,570 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF Depth in inches on drainage area
	Maximum	Minimum	Mean	Per square mile	
October.....	2,312	*892	1,593	0.349	0.40
November.....	6,673	*786	2,515	0.55	0.61
December.....	7,393	1,049	3,087	0.675	0.78
January.....	16,571	1,733	7,889	1.73	1.99
February.....	48,723	3,736	11,632	2.55	2.66
March.....	22,597	5,565	8,650	1.89	2.18
April.....	28,952	*4,912	12,738	2.79	3.11
May.....	9,106	*3,441	5,406	1.18	1.36
June.....	3,663	1,574	2,392	0.523	0.58
July.....	23,161	2,412	9,505	2.08	2.40
August.....	15,303	3,393	8,557	1.87	2.16
September.....	6,558	2,478	4,587	1.00	1.12
The year.....	48,723	*786	6,515	1.43	19.35

\* Sunday.

NOTE.—Above tables supersede those published in Report of State Engineer for 1915, Vol. II, pages 236 and 237. For list of changes see page 258.

Daily discharge, in second-feet, of HUDSON RIVER AT DAM OF ADIRONDACK ELECTRIC POWER CORPORATION (LOWER DAM), MECHANICVILLE, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	3,465	4,889	6,748	8,880	23,634	10,896	36,283	24,366	10,801
2.....	3,149	4,276	6,589	7,944	21,370	10,166	44,166	22,526	10,064
3.....	2,119	4,211	6,379	8,412	17,291	9,925	39,442	20,935	8,910
4.....	3,551	4,444	6,278	8,987	15,158	8,590	37,285	21,577	7,084
5.....	4,481	4,177	4,330	7,871	17,995	7,020	34,343	19,642	8,568
6.....	5,091	3,843	5,202	6,957	18,409	7,544	31,680	19,168	8,040
7.....	5,784	2,502	4,698	7,521	20,317	8,393	28,870	17,256	6,957
8.....	6,984	4,016	5,022	8,880	12,810	8,635	27,406	16,639	6,368
9.....	5,071	4,030	4,353	7,248	10,974	7,573	25,192	18,088	6,579
10.....	5,071	3,945	4,232	8,140	10,544	6,842	24,460	15,775	5,617
11.....	5,445	3,283	4,231	8,221	9,388	6,548	21,650	13,763	4,768
12.....	5,272	3,372	3,561	7,408	9,550	5,714	21,498	11,215	6,975
13.....	4,763	3,403	3,684	7,640	7,525	6,885	22,058	12,189	6,698
14.....	4,376	2,592	3,811	7,934	6,732	6,664	23,890	9,899	6,573
15.....	5,222	3,325	4,019	6,227	7,131	6,126	27,349	10,192	6,520
16.....	5,165	3,786	3,967	5,629	6,953	6,129	24,705	7,985	6,373
17.....	3,454	4,642	3,644	6,169	6,309	5,615	25,444	14,291	6,117
18.....	5,924	5,268	5,593	6,439	6,852	5,373	27,600	25,264	6,940
19.....	5,621	5,149	12,791	6,177	6,972	4,486	28,076	33,242	10,559
20.....	5,001	5,678	11,104	5,275	5,107	6,334	22,771	29,821	11,545
21.....	5,253	5,947	9,121	5,827	6,029	5,682	25,652	23,977	10,996
22.....	5,588	9,318	8,158	7,459	6,018	5,647	25,219	22,714	10,623
23.....	5,307	8,312	7,408	12,871	4,962	5,532	27,142	20,323	9,534
24.....	4,841	7,576	7,125	11,106	5,748	5,274	30,860	17,982	7,732
25.....	4,652	6,211	6,807	11,959	6,398	5,452	32,091	20,013	6,376
26.....	4,142	5,771	17,702	12,681	10,100	5,117	31,655	16,359	7,536
27.....	4,273	6,086	18,601	14,683	13,704	5,945	30,574	14,721	6,848
28.....	4,405	3,618	17,498	19,476	14,615	7,996	29,728	11,581	7,133
29.....	4,149	5,558	14,641	22,804	11,407	13,315	27,532	10,381	7,159
30.....	4,817	7,318	11,453	18,014	.....	22,199	25,365	9,566	6,638
31.....	3,884	.....	10,506	21,268	.....	33,138	.....	12,601	.....
Mean....	4,720	4,885	7,718	9,874	11,035	8,412	28,666	17,548	7,768

NOTE.— Beginning May 15, water used for canal purposes is included.

Monthly discharge, in second-feet, of HUDSON RIVER AT DAM OF ADIRONDACK ELECTRIC POWER CORPORATION (LOWER DAM), MECHANICVILLE, for the nine months ending June 30, 1916

[Drainage area, 4,570 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF Depth in inches on drainage area
	Maximum	Minimum	Mean	Per square mile	
October.....	6,984	*2,119	4,720	1.03	1.19
November.....	9,318	*2,502	4,885	1.07	1.19
December.....	18,601	*3,561	7,718	1.69	1.95
January.....	22,804	5,275	9,874	2.160	2.49
February.....	23,634	4,962	11,035	2.414	2.60
March.....	33,138	*4,486	8,412	1.841	2.12
April.....	44,166	21,498	28,666	6.272	7.00
May.....	33,242	7,985	17,548	3.840	4.43
June.....	11,545	*4,768	7,768	1.700	1.90

\* Sunday.



## HUDSON RIVER ABOVE FEDERAL DAM, TROY

This station is located at the upper end of the Federal lock at Troy and indicates the water-surface of the Hudson river above the Federal dam, completed November 18, 1915. An inlaid tile vertical staff gage on the east lock wall is read to tenths every four hours. The zero of this gage is 2 feet below mean sea-level and 1.13 feet below Barge canal datum.

Records are taken and furnished by the United States Engineer Office, Albany, N. Y. Records obtained during construction prior to October 1, 1915, have not been published.

Daily elevation of water-surface (B. C. Datum) of HUDSON RIVER ABOVE FEDERAL DAM AT TROY, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	16.33	16.86	18.52	18.24	20.38	18.33	23.07	19.53	17.78
2.....	16.06	17.47	18.63	18.20	20.40	18.25	24.44	19.25	17.59
3.....	16.66	17.31	18.21	18.67	19.58	18.03	23.02	19.07	17.56
4.....	17.12	16.79	18.18	18.94	19.12	17.79	22.15	19.08	17.24
5.....	17.68	16.29	17.69	18.57	18.78	17.64	21.25	19.05	17.49
6.....	18.88	16.86	17.80	19.12	18.60	17.73	21.19	18.82	17.48
7.....	19.55	17.07	17.71	19.88	18.66	17.48	20.97	17.95	17.57
8.....	19.31	16.96	17.79	19.10	18.31	17.30	20.32	18.50	17.24
9.....	18.67	16.97	17.66	18.49	17.86	16.95	19.98	18.67	17.12
10.....	18.07	17.11	17.26	18.37	17.80	16.42	19.75	18.29	17.00
11.....	17.69	16.77	17.72	18.29	17.74	16.41	19.67	18.15	16.97
12.....	17.40	16.46	17.33	18.39	17.50	16.25	19.97	17.77	17.02
13.....	17.07	16.64	17.43	18.21	17.25	16.24	20.24	17.55	17.29
14.....	16.97	16.29	16.80	18.33	17.23	16.55	20.11	17.24	17.04
15.....	17.65	16.26	16.88	17.95	17.21	16.55	20.86	17.34	17.16
16.....	19.02	17.97	16.82	17.59	17.13	16.32	20.37	17.67	17.26
17.....	18.54	17.30	17.39	17.64	17.13	15.95	20.29	18.64	17.68
18.....	17.95	18.10	17.55	17.61	17.37	15.80	20.47	20.90	17.90
19.....	18.07	17.68	19.17	17.33	17.25	17.70	20.28	21.14	18.21
20.....	18.48	18.22	19.43	17.03	16.70	17.54	19.85	20.50	18.36
21.....	18.99	18.79	18.93	17.30	16.45	15.97	19.73	19.61	18.31
22.....	18.67	18.95	18.67	18.01	16.59	15.94	19.81	19.46	18.10
23.....	18.15	18.55	18.44	17.97	16.47	15.99	20.35	19.02	17.85
24.....	17.61	18.28	18.30	19.92	16.56	17.64	20.66	19.24	17.55
25.....	17.09	18.80	18.15	19.51	17.30	15.97	20.62	19.32	17.30
26.....	17.26	17.75	19.79	19.46	18.41	15.96	20.40	18.60	17.34
27.....	17.13	17.94	20.33	20.12	19.30	16.45	20.22	18.27	17.35
28.....	17.21	17.57	19.83	21.35	18.98	18.01	20.17	18.02	17.92
29.....	17.37	17.65	19.44	21.64	18.44	19.27	19.97	17.85	17.53
30.....	17.35	18.45	18.87	20.20	.....	21.05	19.82	17.70	17.25
31.....	17.96	.....	18.54	19.81	.....	22.46	.....	17.99	.....

NOTE.—Federal dam completed November 18, 1915.

**HUDSON RIVER BELOW FEDERAL DAM, TROY**

This station, established May 1, 1916, is located at lower end of the Federal lock at Troy and indicates water-surface of the Hudson river below the Federal dam. An inlaid tile vertical staff gage on the east lock wall is read twice daily — at 8 A. M. and 4 P. M. — to tenths. The zero of this gage is 16 feet below mean sea-level and 15.13 feet below Barge canal datum. The water-surface was affected by the remains of the old State dam until July 26, 1916, when the removal of the old structure was completed.

As the river is tidal at this point, changes of water-surface at ordinary stages of the river are due more to tides than to discharge.

Daily elevation of water-surface (B. C. Datum) of HUDSON RIVER BELOW FEDERAL DAM AT TROY, for the nine months ending June 30, 1916. J. B. Mackey, Observer

DAY	May	June	DAY	May	June	DAY	May	June
1.....	9.26	5.05	11.....	5.75	3.20	21.....	9.50	5.70
2.....	8.70	4.75	12.....	4.45	3.10	22.....	8.35	4.95
3.....	7.60	5.75	13.....	4.45	3.45	23.....	7.70	4.35
4.....	8.05	3.35	14.....	3.75	3.00	24.....	7.75	3.80
5.....	7.95	5.10	15.....	4.30	3.50	25.....	8.05	4.40
6.....	7.90	4.05	16.....	4.80	5.30	26.....	6.25	2.55
7.....	5.80	4.50	17.....	6.35	5.90	27.....	5.70	3.35
8.....	6.90	4.20	18.....	12.25	6.35	28.....	5.20	4.60
9.....	6.95	3.20	19.....	13.30	6.65	29.....	4.95	3.50
10.....	5.85	3.05	20.....	11.75	6.05	30.....	5.50	3.30
						31.....	5.70	.....

NOTE.— State dam entirely removed, July 26, 1916.

· HUDSON RIVER ABOVE STATE DAM, TROY

This station, established November 15, 1904, was located above the State dam across the Hudson river at Troy on the east bank above the sloop lock. The gage was a staff in two sections. The lower section was on the timber docking above the west wall of the sloop lock. The upper section was on a tree between the lock and the dam. The gage was read twice daily — at 7 A. M. and 5 P. M. For changed condition at Troy see Hudson river description. This gage was maintained in coöperation with the United States Weather Bureau.

This station was abandoned March 31, 1916, owing to the removal of the State dam.

Daily elevation of water-surface (B. C. Datum) of HUDSON RIVER ABOVE STATE DAM AT TROY, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
1.....	15.77	16.52	18.22	10.57	12.92	8.97
2.....	15.62	17.47	18.37	10.47	13.52	8.77
3.....	16.77	17.17	18.22	11.62	11.72	8.27
4.....	16.72	16.82	18.07	13.02	10.67	7.87
5.....	17.07	16.27	17.67	11.77	9.72	7.42
6.....	17.47	17.12	17.72	12.82	9.47	7.07
7.....	18.42	17.12	17.57	15.17	9.52	7.07
8.....	18.77	16.77	17.62	13.17	8.42	7.07
9.....	18.12	16.87	17.57	12.22	7.72	7.12
10.....	17.62	17.02	17.07	11.07	7.47	6.57
11.....	17.12	16.67	17.62	11.27	7.42	6.42
12.....	17.42	16.32	17.17	10.92	7.07	6.17
13.....	16.97	16.52	17.12	10.57	6.97	6.27
14.....	16.22	16.32	17.72	10.27	7.62	6.47
15.....	16.82	16.07	17.22	10.22	7.02	6.47
16.....	18.82	17.82	16.62	9.32	7.07	6.32
17.....	17.77	18.12	17.32	9.17	6.97	6.07
18.....	17.12	17.97	17.47	8.87	7.22	5.57
19.....	17.52	17.62	19.02	8.52	6.92	5.47
20.....	17.82	18.02	19.37	8.07	6.17	5.67
21.....	18.47	18.62	18.87	8.22	6.07	5.87
22.....	18.22	18.87	18.57	9.47	6.07	6.27
23.....	17.62	18.42	18.32	14.92	6.32	6.27
24.....	17.27	18.17	18.17	14.57	6.07	5.62
25.....	16.57	17.72	18.07	13.47	6.32	4.92
26.....	16.77	17.62	19.37	12.57	8.77	5.37
27.....	17.02	17.87	19.57	12.77	11.57	6.02
28.....	17.07	17.42	19.72	14.47	10.87	7.22
29.....	17.37	17.47	19.32	15.07	9.32	10.22
30.....	17.27	18.37	18.82	13.12	.....	14.07
31.....	16.32	.....	18.42	12.32	.....	16.77

NOTE.— This station was abandoned March 31, 1916.

**HUDSON RIVER BELOW STATE DAM, TROY**

This station, established January 19, 1903, and maintained in cooperation with the United States Weather Bureau, was located below the old State dam at Troy. The gage was a staff on the lower end of the west side of the sloop lock on the east bank of the river. The gage was read twice daily — at 7 A. M. and 5 P. M. As the river is tidal at this point, changes of elevations at ordinary stages of the river are due more to tides than to discharge.

This station was abandoned on April 30, 1916, and subsequent records kept below the new Federal dam.

Daily elevation of water-surface (B. C. Datum) of HUDSON RIVER BELOW STATE DAM AT TROY, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	5.21	6.11	6.11	5.91	8.36	5.36	15.56	.....	.....
2.....	5.46	6.26	6.36	6.61	9.11	5.03	18.46	.....	.....
3.....	5.91	6.31	5.66	6.26	6.66	4.96	16.51	.....	.....
4.....	7.61	5.71	6.16	6.61	5.36	4.11	13.91	.....	.....
5.....	9.51	5.11	6.51	5.61	4.46	3.66	11.66	.....	.....
6.....	8.71	5.16	5.11	5.51	4.66	3.36	11.51	.....	.....
7.....	9.91	5.71	5.41	8.81	4.76	3.51	10.71	.....	.....
8.....	11.61	4.96	5.36	7.81	2.76	3.41	8.91	.....	.....
9.....	12.91	6.36	6.76	7.81	2.66	3.11	7.76	.....	.....
10.....	11.91	5.81	7.71	7.31	2.61	2.56	7.01	.....	.....
11.....	9.71	5.46	6.91	6.61	1.71	2.36	6.61	.....	.....
12.....	10.51	4.81	6.66	5.81	1.96	2.11	7.31	.....	.....
13.....	9.96	4.61	7.21	5.66	2.21	1.86	8.61	.....	.....
14.....	10.96	5.26	7.36	5.06	4.16	1.86	8.11	.....	.....
15.....	8.91	5.01	6.61	5.41	3.86	2.61	10.61	.....	.....
16.....	8.51	5.26	8.06	4.71	3.56	2.81	9.26	.....	.....
17.....	9.66	5.06	8.61	4.66	3.51	2.16	8.96	.....	.....
18.....	9.76	4.61	10.01	4.31	3.61	1.16	9.03	.....	.....
19.....	9.36	4.61	11.26	3.56	3.66	3.71	8.91	.....	.....
20.....	8.86	5.61	9.41	3.16	1.81	3.51	8.21	.....	.....
21.....	10.41	5.91	9.21	3.46	1.91	3.11	8.41	.....	.....
22.....	9.61	6.56	11.11	4.51	2.11	3.03	7.51	.....	.....
23.....	8.51	6.01	13.01	9.71	1.86	3.03	9.03	.....	.....
24.....	9.06	6.16	13.26	11.01	2.03	2.31	9.71	.....	.....
25.....	9.06	6.81	12.41	9.26	2.26	1.66	9.51	.....	.....
26.....	8.96	6.26	12.71	8.01	5.41	2.36	8.61	.....	.....
27.....	7.31	6.06	12.91	8.21	8.26	2.56	8.21	.....	.....
28.....	6.66	6.91	15.01	10.66	7.46	4.11	8.21	.....	.....
29.....	5.86	6.01	13.41	12.31	5.56	6.76	7.81	.....	.....
30.....	6.56	5.96	11.06	8.76	.....	10.01	7.36	.....	.....
31.....	6.71	.....	8.76	7.56	.....	13.51	.....	.....	.....

NOTE.— This station was abandoned April 30, 1916.

**HUDSON RIVER AT ALBANY**

The following tables, furnished by the United States Engineer Office, Albany, N. Y., through the courtesy of Major James F. Bell, Corps of Engineers, U. S. Army, give the elevations of the lower high and lower low tide recorded daily by the automatic

tide gage at foot of State street, Albany, during the nine months ending June 30, 1916.

The elevations are referred to an assumed plane of lowest low water in the Hudson river at this locality, which is 2.0 feet below the mean sea-level at Sandy Hook, N. J., or 15.863 feet below the elevation of "Greenbush" bench-mark, as published in the Annual Report of the U. S. Coast and Geodetic Survey for 1903, Appendix No. 3.

The plane of mean low tide at Albany, as determined from the mean of observations taken July 3 to November 17, 1876, was about 13.40 feet below the Greenbush bench-mark and, as determined by observations taken during the same period in 1908 and 1909, was about 13.80 feet below that bench-mark.

To reduce elevations in the tables to Barge canal datum, subtract 1.13 feet.

Daily record of elevation of LOWER HIGH TIDE IN HUDSON RIVER AT ALBANY, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	4.00	5.47	5.26	7.50	8.08	6.64	14.26	7.70	5.28
2.....	5.34	5.06	5.24	7.30	9.20	6.39	15.06	7.01	5.66
3.....	5.12	4.18	5.12	7.89	8.12	6.33	13.84	7.12	5.99
4.....	5.43	4.00	5.41	7.82	7.07	6.03	12.52	6.51	5.10
5.....	6.12	5.16	5.01	7.68	6.31	6.39	10.65	6.83	5.63
6.....	5.85	4.46	4.90	7.70	6.77	5.25	10.60	6.02	5.14
7.....	6.28	5.50	5.16	9.83	6.83	b 6.17	9.73	5.89	5.73
8.....	6.99	5.36	6.09	7.99	4.69	6.11	8.50	6.19	5.62
9.....	6.31	6.16	5.97	6.72	5.00	4.25	7.56	5.06	5.93
10.....	5.76	4.29	b 4.02	6.71	4.58	4.56	7.56	5.94	5.40
11.....	5.42	4.51	b 5.21	b 6.71	4.80	4.55	6.99	6.00	5.29
12.....	5.75	5.35	5.02	a	4.58	3.90	7.42	4.21	5.20
13.....	5.11	4.72	4.33	b 6.50	5.15	4.15	8.28	4.82	5.06
14.....	5.22	4.50	4.07	5.70	5.84	4.16	8.31	4.71	5.69
15.....	4.82	5.51	2.79	5.02	6.05	5.05	9.45	5.28	6.14
16.....	5.30	3.76	3.03	5.33	5.99	4.74	9.33	5.64	6.41
17.....	5.43	4.41	3.66	5.04	5.88	4.48	9.27	6.70	6.62
18.....	5.40	4.37	4.89	4.39	5.93	3.20	8.97	9.14	6.08
19.....	6.21	5.20	4.51	4.00	5.32	4.96	8.46	10.11	6.63
20.....	5.90	7.12	6.46	4.13	4.11	4.80	8.22	8.70	6.40
21.....	5.81	5.33	6.35	4.79	4.33	5.53	8.00	6.99	6.39
22.....	5.94	5.10	6.00	5.10	4.67	5.76	8.24	7.50	5.53
23.....	4.60	5.37	5.89	7.08	4.76	5.21	9.03	7.42	5.35
24.....	4.76	5.68	5.73	9.00	5.08	4.30	9.51	7.24	5.58
25.....	5.18	5.45	5.32	8.44	6.47	4.36	9.33	7.11	5.55
26.....	5.96	6.08	7.48	8.49	7.83	4.84	9.20	5.87	5.21
27.....	5.05	5.98	8.90	9.50	7.64	5.60	8.92	6.09	5.64
28.....	4.35	5.21	8.00	10.09	7.50	5.77	8.69	6.29	5.34
29.....	5.36	5.51	7.53	11.79	6.47	7.26	8.32	5.61	5.11
30.....	3.47	5.12	7.46	9.39	.....	10.50	7.81	6.15	4.95
31.....	8.30	.....	7.14	8.09	.....	12.94	.....	4.96	.....

Elevations are referred to an assumed plane of lowest low water in this locality, which is two feet below mean sea-level. To reduce to Barge canal datum, subtract 1.13 feet.

a No record. b One tide only recorded.

Daily record of elevation of LOWER LOW TIDE IN HUDSON RIVER AT ALBANY, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	2.02	2.35	2.60	7.22	7.50	5.97	14.05	6.46	2.93
2.....	2.79	2.24	2.94	7.12	8.76	5.70	14.48	6.02	2.79
3.....	2.50	1.29	2.57	7.59	6.65	5.54	14.60	5.51	3.25
4.....	2.76	1.38	2.60	7.65	5.59	5.09	12.69	5.45	2.50
5.....	3.24	1.82	1.86	7.35	4.75	4.94	10.60	5.43	2.71
6.....	2.77	1.43	2.00	7.41	4.84	4.26	10.52	5.23	2.73
7.....	3.77	2.25	2.00	9.14	5.17	b 4.56	10.00	4.30	2.72
8.....	4.18	2.22	2.99	7.72	3.80	b 4.85	8.32	4.37	2.71
9.....	3.47	2.71	2.62	6.19	3.89	4.15	7.40	4.63	2.82
10.....	2.72	1.23	1.05	5.81	3.98	3.43	6.64	3.96	2.46
11.....	2.61	1.71	b 1.89	b 6.00	3.65	3.55	6.52	3.45	2.27
12.....	2.68	2.04	2.40	a	4.12	3.18	7.06	2.11	2.43
13.....	2.16	1.90	2.55	b 5.67	5.08	3.54	7.96	2.69	2.37
14.....	2.42	1.85	2.47	4.76	5.80	3.53	7.46	2.11	2.72
15.....	2.09	2.20	2.06	4.24	5.83	4.18	9.28	2.62	3.17
16.....	2.64	1.20	2.25	4.38	5.63	3.68	8.81	2.58	3.26
17.....	2.62	2.06	2.85	4.09	5.48	3.38	8.46	4.10	3.31
18.....	2.39	1.99	4.00	3.47	5.55	2.22	8.46	9.04	3.63
19.....	3.00	2.73	4.31	3.61	5.22	3.13	8.20	9.91	4.00
20.....	2.90	4.50	6.00	3.09	3.67	3.30	7.46	8.57	4.03
21.....	3.23	3.90	6.08	3.48	3.41	3.72	7.08	6.44	3.72
22.....	3.04	3.80	5.70	3.83	3.68	4.17	6.91	5.96	3.12
23.....	2.18	3.70	5.31	6.37	3.72	4.26	7.85	5.58	2.71
24.....	1.70	3.46	5.05	8.83	3.72	3.70	8.69	5.49	2.84
25.....	2.34	3.36	4.80	8.28	4.51	2.99	9.04	5.04	2.66
26.....	3.08	3.60	5.56	8.02	6.36	3.26	8.44	4.01	2.52
27.....	2.30	3.70	8.80	8.59	7.80	3.66	7.92	3.88	2.85
28.....	2.20	2.65	7.95	9.96	7.06	5.06	7.90	3.47	2.99
29.....	2.89	2.82	7.04	10.93	5.91	7.06	7.31	3.07	2.74
30.....	2.12	2.93	7.10	8.06	.....	10.85	7.00	3.12	2.56
31.....	0.69	.....	7.00	7.39	.....	13.33	.....	3.38	.....

Elevations are referred to an assumed plane of lowest low water in this locality, which is two feet below mean sea-level. To reduce to Barge canal datum, subtract 1.13 feet.

a No record.

b One tide only recorded.

#### DIFFERENCE IN TIME AND RANGE OF TIDES ON HUDSON RIVER

The following table prepared by the Corps of Engineers, U. S. A., shows the difference in time between the occurrence of high or low tide at Albany and at various localities on the Hudson river from Troy to New York, also the amounts of mean tidal range at the same localities.

To obtain the actual time of any desired high or low tide at a given locality apply the correction indicated in the table to the time of the same tide at Albany.

LOCALITY	DISTANCE FROM ALBANY	DIFFER- ENCE	HIGH WATER		LOW WATER		MEAN RANGE
	Miles	+ or —	Hours	Minutes	Hours	Minutes	Feet
Troy (Congress St.).....	6½	Add	0	23	0	36	2.92
Albany.....	0						2.88
Castleton.....	8½	Subtract	0	56	1	00	2.78
New Baltimore.....	15	Subtract	1	45	2	00	3.21
Stuyvesant.....	19	Subtract	2	08	2	28	3.50
Coxsackie.....	21	Subtract	2	35	2	57	3.66
Hudson.....	28	Subtract	3	00	3	55	4.08
Catskill.....	33	Subtract	3	16	3	56	4.20
Germantown.....	39	Subtract	3	48	4	26	4.10
Saugerties-Tivoli.....	44	Subtract	4	10	4	50	4.00
Rondout-Rhinebeck.....	56	Subtract	4	26	5	10	3.90
Poughkeepsie.....	70	Subtract	4	57	5	47	3.10
New York (Governor's Island).....	145	Subtract	9	50	11	02	4.40

## CEDAR RIVER

### CEDAR RIVER NEAR INDIAN LAKE

**Location.**— At the steel highway bridge about 2 miles west of Indian Lake village, Hamilton county, about 12 miles by river above its confluence with the Hudson, 8 miles by river above the mouth of Rock river and 10 miles by river below Cedar river flow (Wakely dam).

**Records available.**— July 15, 1911, to June 30, 1916.

**Drainage area.**— 85 square miles. (Measured on United States Geological Survey topographic maps.)

**Gage.**— Standard chain gage attached to bridge.

**Control.**— Gravel rift about 200 feet below the bridge; fairly permanent.

**Discharge measurements.**— Made from the bridge at high stages and by wading at low stages.

**Storage.**— The basin contains many lakes and swamps affording favorable sites for storage reservoirs which would be influential in regulating the discharge of Hudson river. The most important are Cedar lakes and Cedar river flow. Cedar river flow is controlled by a lumberman's dam and is used principally during the logging season.

**Winter flow.**— Discharge relation affected by ice during long winter period and observations suspended.

**Extremes of discharge.**— Current period: Maximum stage recorded, 12.15 feet at 6 P. M., May 17; discharge, approximately 3,700 second-feet. Minimum stage recorded, 2.60 feet from October 1 to 4, inclusive; discharge, 26 second-feet.

1911-1916: Maximum stage recorded, 12.15 feet at 6 p. m., May 17, 1916; discharge, approximately 3,700 second-feet. Minimum stage recorded, 2.10 feet at 4 p. m., September 27, 1915; discharge, approximately 5 second-feet.

**Accuracy.**—Rating curve fairly well defined. Extreme fluctuations in stage during logging operations make daily discharge values very uncertain. Monthly estimates for these periods probably fair.

**Cooperation.**—Established and maintained by the United States Geological Survey in coöperation with the State Conservation Commission.

Daily gage height, in feet, of CEDAR RIVER NEAR INDIAN LAKE, for the nine months ending June 30, 1916. Chauncy Hill, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	2.60	3.35	4.2	.....	.....	.....	.....	4.5	4.4
2.....	2.60	3.15	4.9	.....	.....	.....	.....	4.9	4.35
3.....	2.60	3.15	5.4	.....	.....	.....	.....	5.2	4.6
4.....	2.60	3.35	5.0	.....	.....	.....	.....	7.3	5.0
5.....	4.5	3.15	.....	.....	.....	.....	.....	4.4	4.8
6.....	5.0	3.2	.....	.....	.....	.....	.....	4.35	4.6
7.....	4.3	3.2	.....	.....	.....	.....	.....	3.9	4.7
8.....	4.6	3.15	.....	.....	.....	.....	.....	5.0	4.9
9.....	4.6	3.2	.....	.....	.....	.....	.....	5.0	5.4
10.....	4.2	3.2	.....	.....	.....	.....	.....	5.2	5.0
11.....	3.8	3.3	.....	.....	.....	.....	.....	5.4	4.8
12.....	3.45	3.1	.....	.....	.....	.....	.....	7.0	4.6
13.....	3.15	2.94	.....	.....	.....	.....	.....	4.2	4.5
14.....	3.1	3.1	.....	.....	.....	.....	.....	3.6	4.5
15.....	3.2	4.6	.....	.....	.....	.....	.....	3.7	4.0
16.....	3.15	5.6	.....	.....	.....	.....	5.5	8.4	4.1
17.....	3.3	4.8	.....	.....	.....	.....	4.8	10.2	4.25
18.....	3.15	5.0	.....	.....	.....	.....	4.9	8.3	3.05
19.....	3.25	4.2	.....	.....	.....	.....	4.1	6.5	3.8
20.....	3.05	3.4	.....	.....	.....	.....	4.1	7.5	3.9
21.....	3.3	4.15	.....	.....	.....	.....	4.3	5.5	3.9
22.....	3.2	4.7	.....	.....	.....	.....	4.8	6.3	3.75
23.....	3.2	4.2	.....	.....	.....	.....	5.0	8.3	3.7
24.....	3.1	3.7	.....	.....	.....	.....	6.3	5.5	3.5
25.....	3.15	3.8	.....	.....	.....	.....	10.4	5.3	3.6
26.....	3.15	3.9	.....	.....	.....	.....	10.2	5.1	3.4
27.....	3.3	3.8	.....	.....	.....	.....	10.4	5.1	3.4
28.....	3.1	3.9	.....	.....	.....	.....	4.9	3.3	3.3
29.....	3.2	4.2	.....	.....	.....	.....	4.7	6.2	3.2
30.....	3.2	4.1	.....	.....	.....	.....	10.0	4.4	3.2
31.....	3.1	.....	.....	.....	.....	.....	.....	3.6	.....

NOTE.—Discharge relation affected by ice from about December 1 to April 15. Gage observation suspended, December 5 to April 15.



Daily discharge, in second-feet, of CEDAR RIVER NEAR INDIAN LAKE, for the year ending September 30, 1915

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1.....	34	52	810					2,650	34	194	42	74
2.....	30	42	634					130	34	93	86	34
3.....	30	42	702					226	34	68	39	24
4.....	27	62	370					164	34	122	130	20
5.....	27	74	226					130	30	237	184	24
6.....	27	62	146					2,650	9	204	226	27
7.....	62	52	138					100	848	146	226	27
8.....	100	42	130					130	35	422	155	74
9.....	164	42	130					146	33	478	68	27
10.....	146	27	138					111	28	422	54	34
11.....	146	42	107					86	50	450	74	27
12.....	114	42	130					86	74	62	54	27
13.....	107	42	130				1,080	74	40	44	48	27
14.....	100	74	204				668	62	62	58	54	52
15.....	52	80	194				538	62	74	36	37	47
16.....	57	1,250	184				570	52	174	74	57	33
17.....	62	1,250	184				668	74	194	226	42	28
18.....	62	738	174				634	52	138	154	40	28
19.....	74	702	164				602	52	146	86	36	36
20.....	100	702					602	62	122	107	40	27
21.....	74	370					570	42	62	62	44	27
22.....	42	370					570	52	47	49	688	27
23.....	42	248					508	42	40	50	848	27
24.....	47	204					248	42	50	48	634	27
25.....	42	194					184	42	50	74	508	27
26.....	52	204					130	52	44	62	320	34
27.....	38	296					2,210	42	50	86	155	13
28.....	34	810					114	42	50	68	130	27
29.....	62	1,040					2,300	42	30	284	130	27
30.....	52	1,040					146	52	39	114	114	27
31.....	57							34		43	80	
Mean...	66	340	258				686	245	88	149	172	32

Monthly discharge of CEDAR RIVER NEAR INDIAN LAKE, for the year ending September 30, 1915

[Drainage area, 85 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF		Accuracy
	Maximum	Minimum	Mean	Per square mile	Depth in inches on drainage area		
October.....	164	27	66	0.776	0.89	B	
November.....	1,250	27	340	4.06	4.46	B	
December, 1-19, incl.....	810	107	258	3.04	2.15	C	
January.....							
February.....							
March.....							
April, 13-30, incl.....	2,300	114	685	8.06	5.40	D	
May.....	2,650	34	245	2.88	3.32	C	
June.....	848	9	88	1.04	1.16	B	
July.....	478	36	149	1.75	2.02	A	
August.....	848	36	172	2.02	2.33	A	
September.....	74	13	32	0.376	0.42	B	

NOTE.— The rating has been improved on the basis of measurements made during 1916 and the tables above supersede those published in the Report of State Engineer for 1915, Vol. II, page 245.

Daily discharge, in second-feet, of CEDAR RIVER NEAR INDIAN LAKE, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	27	107	.....	.....	.....	.....	.....	344	320
2.....	27	80	.....	.....	.....	.....	.....	450	308
3.....	27	80	.....	.....	.....	.....	.....	538	370
4.....	27	107	.....	.....	.....	.....	.....	1,340	478
5.....	344	80	.....	.....	.....	.....	.....	320	422
6.....	478	86	.....	.....	.....	.....	.....	308	370
7.....	296	86	.....	.....	.....	.....	.....	204	396
8.....	370	80	.....	.....	.....	.....	.....	478	450
9.....	370	86	.....	.....	.....	.....	.....	478	602
10.....	272	86	.....	.....	.....	.....	.....	538	478
11.....	184	100	.....	.....	.....	.....	.....	602	422
12.....	122	74	.....	.....	.....	.....	.....	1,210	370
13.....	80	56	.....	.....	.....	.....	.....	272	344
14.....	74	74	.....	.....	.....	.....	.....	146	344
15.....	86	370	.....	.....	.....	.....	.....	164	226
16.....	80	668	.....	.....	.....	.....	634	1,820	248
17.....	100	422	.....	.....	.....	.....	422	2,700	284
18.....	80	478	.....	.....	.....	.....	450	1,780	215
19.....	93	272	.....	.....	.....	.....	248	1,000	184
20.....	68	114	.....	.....	.....	.....	248	1,420	204
21.....	100	260	.....	.....	.....	.....	296	634	204
22.....	86	596	.....	.....	.....	.....	422	924	174
23.....	86	272	.....	.....	.....	.....	478	1,780	164
24.....	74	164	.....	.....	.....	.....	924	634	130
25.....	80	184	.....	.....	.....	.....	2,800	570	146
26.....	80	204	.....	.....	.....	.....	2,700	508	114
27.....	100	184	.....	.....	.....	.....	2,800	508	114
28.....	74	204	.....	.....	.....	.....	450	100	100
29.....	86	272	.....	.....	.....	.....	396	886	86
30.....	86	248	.....	.....	.....	.....	2,000	320	86
31.....	74	.....	.....	.....	.....	.....	.....	146	.....
Mean....	133	196	.....	.....	.....	.....	1,060	746	278

NOTE.— Discharge relation affected by ice, December 1 to April 15.

Monthly discharge of CEDAR RIVER NEAR INDIAN LAKE, for the nine months ending June 30, 1916

[Drainage area, 85 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF	Accu- racy
	Maximum	Minimum	Mean	Per square mile	Depth in inches on drainage area	
October.....	478	27	133	1.56	1.80	B
November.....	668	56	196	2.31	2.58	B
December.....	.....	.....	.....	.....	.....	.....
January.....	.....	.....	.....	.....	.....	.....
February.....	.....	.....	.....	.....	.....	.....
March.....	.....	.....	.....	.....	.....	.....
April, 16-30, incl.....	2,800	248	1,060	12.48	6.96	C
May.....	2,700	100	746	8.78	10.12	C
June.....	602	86	278	3.27	3.65	B

Discharge measurements of CEDAR RIVER NEAR INDIAN LAKE, during the nine months ending June 30, 1916

DATE	Made by	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 15 a.....	E. D. Burchard.....	3.25	93.7
Oct. 15 a.....	E. D. Burchard.....	3.25	95.7
May 27.....	C. C. Covert.....	3.70	165

a Measurement made by wading under upstream side of bridge.

## INDIAN RIVER

### INDIAN LAKE RESERVOIR AT INDIAN LAKE

**Location.**— At the masonry storage dam at the outlet of Indian lake, about 7½ miles above the confluence of Indian river with the Hudson and about 2 miles south of the village of Indian Lake.

**Records available.**— July 22, 1900, to June 30, 1916.

**Drainage area.**— 131 square miles, including about 9.3 square miles of water-surface of Indian lake at the elevation of crest of spillway. (Measured on United States Geological Survey topographic maps.) There is about one square mile of drainage below the dam and above the meter station.

**Gages.**— Elevation of water-surface in the reservoir is determined by a chain gage on the crest of dam in the angle by the gate-house; read once a day. This gage was installed November 17, 1911, to replace a staff gage previously maintained at same point; datum unchanged. Widths of sluice-gate openings determined by gage scales at sides of gate-stems inside gate-house. Current-meter measurements are referred to a vertical staff gage, in three sections, on right bank of stream about three-fourths mile below the dam.

**Discharge measurements.**— Current-meter measurements made at the cable station about three-fourths mile below the dam.

**Discharge ratings.**— The records include the discharge through one or both of two 5-foot circular sluice-gates, when open, ratings for which have been determined by current-meter measurements; the discharge over a spillway, consisting of five sections with a total effective length of 88.7 feet, the rating for which has been prepared by the use of coefficients derived from experiments made in the hydraulic laboratory of Cornell University on a full-sized model 6.58 feet in length;\* and the discharge through two logways when open.

\* See Water-Supply Paper 200, pages 190-2.

From June 5, 1915, to June 30, 1916, the gage height at the river station was observed twice weekly. The daily discharge was computed from these gage heights on days of observation and for other days discharge was interpolated, taking into consideration the lake elevation and gate openings.

**Regulation.**—At ordinary stages the discharge is completely regulated by the operation of the sluice-gates. Water is held in storage until needed to supplement the flow of the upper Hudson river during the low-water period. The storage capacity of about 4.7 billion cubic feet provides for a discharge of approximately 600 second-feet for a period of 90 days.

**Extremes of stage.**—Current period: Maximum elevation of water-surface in reservoir, 36.8 feet, May 18 and 19. Minimum stage recorded, 22.85 feet, March 30.

1900–1916: Maximum elevation of water-surface in reservoir, 38.8 feet, March 28, 1913. Minimum stage, 2.0 feet, March 9 to 18, 1907, and January 3 to 17, 1910.

**Extremes of discharge.**—Current period: Maximum discharge, 1,050 second-feet on May 18 and 19. Minimum discharge, zero, during periods when gates were closed and there was no flow over the spillway.

1900–1916: Maximum discharge, 4,730 second-feet, on March 28, 1913.

**Accuracy.**—Occasional errors in records of sluice-gate openings, especially for days when gates are changed, cause corresponding inaccuracy in estimates of discharge. A comparative study of discharge as determined by current-meter rating and observed gage heights at the cable station and the discharge as determined by the sluice-gate ratings from July 1, 1913, to April 30, 1914, shows a maximum difference in the monthly mean discharge, as determined by the different ratings, of 7.6 per cent; the average difference for the 10 months period was 1.1 per cent.

**Cooperation.**—Maintained by the United States Geological Survey in coöperation with the State Conservation Commission.

**Discharge measurements of INDIAN RIVER NEAR INDIAN LAKE, during the nine months ending June 30, 1916**

DATE	Made by	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 15.....	E. D. Burchard.....	2.45	403
Oct. 15.....	E. D. Burchard.....	2.44	402
June 26.....	O. W. Hartwell.....	2.00	270

**Daily gage height, in feet, of INDIAN LAKE RESERVOIR AT INDIAN LAKE, for the nine months ending June 30, 1916. Lester Savarie, Observer**

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	32.85	31.0	28.55	29.15	31.55	30.8	23.65	35.45	35.1
2.....	32.75	30.75	28.7	29.25	31.8	30.9	24.2	35.65	35.0
3.....	32.65	30.55	28.85	29.35	32.0	30.95	24.7	35.85	34.95
4.....	32.55	30.3	28.95	29.45	32.15	30.95	25.25	35.95	34.9
5.....	32.8	30.0	29.0	29.5	32.3	30.75	25.65	36.0	34.85
6.....	33.0	29.8	29.05	29.6	32.45	30.6	25.85	35.95	34.75
7.....	33.1	29.6	29.1	29.75	32.6	30.45	26.2	35.85	34.65
8.....	33.3	29.4	29.15	29.85	32.65	30.25	26.4	35.75	34.6
9.....	33.35	29.2	29.25	29.95	32.7	30.05	26.65	35.7	34.7
10.....	33.4	29.0	29.35	30.1	32.75	29.85	26.85	35.05	34.7
11.....	33.45	28.8	29.25	30.2	32.8	29.55	27.0	35.6	34.7
12.....	33.5	28.6	29.15	30.25	32.85	29.15	27.25	35.55	34.7
13.....	33.35	28.4	28.9	30.3	32.9	28.8	27.55	35.4	34.65
14.....	33.2	28.2	28.8	30.35	32.95	28.4	27.85	35.3	34.6
15.....	33.1	28.0	28.7	30.4	33.0	28.0	28.15	35.2	34.5
16.....	33.0	27.8	28.6	30.5	32.85	27.6	28.5	35.4	34.45
17.....	32.9	27.6	28.5	30.6	32.7	27.25	29.05	36.1	34.8
18.....	32.8	27.4	28.45	30.65	32.5	26.85	29.5	36.8	34.9
19.....	32.7	27.0	28.65	30.7	32.25	26.5	30.1	36.8	34.95
20.....	32.6	27.4	28.7	30.5	32.0	26.15	30.5	36.65	35.0
21.....	32.45	27.55	28.75	30.3	31.75	25.8	30.95	36.4	35.05
22.....	32.35	27.65	28.8	30.15	31.4	25.45	31.45	36.25	35.00
23.....	32.35	27.75	28.85	30.0	31.05	25.15	32.05	36.05	34.95
24.....	32.4	27.85	28.9	29.85	30.7	24.75	32.65	35.95	34.85
25.....	32.4	27.9	28.8	29.7	30.4	24.35	33.2	35.85	34.8
26.....	32.25	28.05	28.75	29.65	30.2	23.95	33.8	35.7	34.75
27.....	32.05	28.1	28.7	29.75	30.3	23.6	34.25	35.6	34.6
28.....	31.85	28.15	28.65	30.1	30.5	23.25	34.7	35.45	34.55
29.....	31.6	28.25	28.8	30.65	30.7	23.0	35.0	35.3	34.5
30.....	31.4	28.4	28.95	30.95	.....	22.85	35.2	35.25	34.45
31.....	31.2	.....	29.05	31.25	.....	23.2	.....	35.2	.....

Gate openings, in feet, at INDIAN LAKE RESERVOIR AT INDIAN LAKE, for the nine months ending June 30, 1916

DATE	Sluice-gate A open	Sluice-gate B open
October 1 to 7, inclusive.....	2.5	.....
October 12 to 18, inclusive.....	2.5	.....
October 18 to 22, inclusive.....	5.0	.....
October 25 to November 20, inclusive.....	5.0	.....
December 10 to 18, inclusive.....	2.5	.....
December 25 to 28, inclusive.....	5.0	.....
January 19 to 26, inclusive.....	5.0	.....
February 15 to 16, inclusive.....	3.0	.....
February 16 to 26, inclusive.....	5.0	.....
February 21 to 26, inclusive.....	.....	2.5
March 4 to 30, inclusive.....	5.0	.....
March 10 to 30, inclusive.....	.....	5.0

Daily gage height, in feet, of INDIAN RIVER NEAR INDIAN LAKE, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	.....	.....	0.41	.....	.....	0.74	.....	.....	.....
2.....	.....	.....	.....	0.46	0.74	.....	0.26	.....	.....
3.....	2.33	2.9	.....	.....	.....	.....	.....	3.0	.....
4.....	.....	.....	.....	.....	.....	.....	.....	.....	2.15
5.....	.....	.....	0.46	0.48	.....	2.9	0.28	.....	.....
6.....	2.4	.....	.....	.....	0.74	.....	.....	.....	.....
7.....	.....	2.9	.....	.....	.....	.....	.....	3.1	2.05
8.....	.....	.....	0.51	.....	.....	2.9	.....	.....	.....
9.....	.....	.....	.....	0.48	0.76	.....	0.28	.....	.....
10.....	2.4	2.9	.....	.....	.....	.....	.....	2.8	.....
11.....	.....	.....	.....	.....	.....	.....	.....	.....	2.0
12.....	.....	.....	2.2	0.51	.....	3.7	0.28	.....	.....
13.....	2.4	.....	.....	.....	0.74	.....	.....	.....	.....
14.....	.....	2.55	.....	.....	.....	.....	.....	2.6	1.95
15.....	.....	.....	2.2	.....	.....	3.6	.....	.....	.....
16.....	.....	.....	.....	0.51	3.0	.....	0.38	.....	.....
17.....	2.4	2.8	.....	.....	.....	.....	.....	4.0	.....
18.....	.....	.....	.....	.....	.....	.....	.....	.....	2.0
19.....	.....	.....	0.49	2.9	.....	3.6	0.51	.....	.....
20.....	3.0	.....	.....	.....	3.0	.....	.....	.....	.....
21.....	.....	0.44	.....	.....	.....	.....	.....	4.0	2.1
22.....	.....	.....	0.48	.....	.....	3.6	.....	.....	.....
23.....	.....	.....	.....	3.0	3.7	.....	0.54	.....	.....
24.....	.....	0.44	.....	.....	.....	.....	.....	3.0	.....
25.....	.....	.....	.....	.....	.....	.....	.....	.....	2.0
26.....	.....	.....	3.0	3.0	.....	3.6	1.85	.....	.....
27.....	3.0	.....	.....	.....	0.71	.....	.....	.....	.....
28.....	.....	0.41	.....	.....	.....	.....	.....	2.7	1.95
29.....	.....	.....	0.44	.....	.....	3.6	.....	.....	.....
30.....	.....	.....	.....	0.71	.....	.....	1.95	.....	.....
31.....	3.0	.....	.....	.....	.....	.....	.....	2.35	.....

NOTE.— Discharge relation not affected by ice.

Daily discharge, in second-feet, of INDIAN RIVER NEAR INDIAN LAKE, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....			10			35			
2.....				13	35		4		
3.....	369	564						603	
4.....									307
5.....			13	14		564	4		
6.....	385				35				
7.....		564						643	278
8.....			16			564			
9.....				14	37		4		
10.....	385	564						526	
11.....									264
12.....			322	16		897	4		
13.....	385				35				
14.....		436						453	250
15.....			322			853			
16.....				16	603		8		
17.....	385	526						1,030	
18.....									264
19.....			14	564		853	16		
20.....	603				603				
21.....		11						1,030	292
22.....			14			853			
23.....				603	897		18		
24.....		11						603	
25.....									264
26.....			603	603		853	224		
27.....	603				32				
28.....		10						489	250
29.....			11			853			
30.....				32			250		
31.....	603							389	
Mean....	360	360	144	153	291	674	46.7	682	271

NOTE.— Discharge relation not affected by ice.

Monthly discharge of INDIAN RIVER NEAR INDIAN LAKE, for the nine months ending June 30, 1916

[Drainage area, 132 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF	Accu- racy
	Maximum	Minimum	Mean	Per square mile	Depth in inches on drainage area	
October.....	605	35	360	2.73	3.15	B
November.....	574	10	360	2.73	3.05	B
December.....	603	10	144	1.09	1.26	B
January.....	612	13	153	1.16	1.34	C
February.....	919	32	291	2.20	2.37	C
March.....	906	5	674	5.11	5.89	B
April.....	250	4	46.7	0.354	0.40	C
May.....	1,800	369	682	5.17	5.96	B
June.....	347	205	271	2.05	2.29	B

NOTE.— Mean monthly discharge determined by computing the daily discharge from records of lake elevation and gate opening for days when the gage was not read at the river station.

## SCHROON RIVER

## DESCRIPTION

Schroon river rises in Essex county, along the southern slopes of the highest mountains in the Adirondack group, flows in a general southerly direction for about forty-five miles through Essex and Warren counties and joins the Hudson near Thurman. Its total drainage area is 550 square miles. Its headwaters reach an elevation of about 2,000 feet above mean tide; its mouth is at an elevation of about 600 feet.

Its basin is largely forested and contains considerable wild land and numerous lakes and ponds. The most important of these is Schroon lake, through which the river flows, which has a water-surface area of about 6.3 square miles. The only power-plants are at Warrensburg.

## SCHROON RIVER AT RIVERBANK

**Location.**—At the highway bridge, 12 miles above the confluence of Schroon river with the Hudson, 9 miles below the mouth of Schroon lake, about  $3\frac{1}{2}$  miles below the outlet of Brant lake, and 1 mile below the foot of Tumblehead falls. The station is about 9 miles north of Warrensburg, Warren county, where there are several dams used for power development.

**Records available.**—September 2, 1907, to June 30, 1916.

**Drainage area.**—534 square miles. Measured on United States Geological Survey topographic maps.)

**Gage.**—Chain; read twice daily; datum unchanged.

**Control.**—Gravel; not permanent.

**Discharge measurements.**—Made from the bridge.

**Regulation.**—Since 1907 the regimen of flow of Schroon river has been somewhat affected by storage in Schroon lake. In September, 1907, a timber crib dam was constructed at Starbuckville about 6 miles above the station. This dam affords a head of about 8 feet and ponds water to Schroon lake.

**Winter flow.**—Backwater from ice fluctuates rapidly and estimates for this period are approximate.

**Extremes of discharge.**—Current period: Maximum stage recorded, 6.02 feet at 8 A. M., May 19,; discharge, 3,600 second-feet. Minimum stage recorded, 1.21 feet at 4 P. M., November 27; discharge, 98 second-feet.



1907-1916: Maximum stage recorded, 10.7 feet at 5 p. m., March 28, 1913; discharge, approximately 13,500 second-feet. Minimum stage recorded, 0.85 foot at 5 p. m., October 17, 1909; discharge, 28 second-feet.

**Accuracy.**—Open-water curve fairly well developed. Gage heights are sometimes affected by backwater from log jams. Records as published are good.

**Coöperation.**—Established and maintained by the United States Geological Survey in coöperation with the State Conservation Commission.

Daily gage height, in feet, of SCHROON RIVER AT RIVERBANK, for the nine months ending June 30, 1916. J. H. Roberts, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	2.15	2.25	2.5	3.6	4.1	4.0	4.3	4.8	3.6
2.....	2.15	2.2	2.5	3.6	4.2	3.8	4.7	4.7	3.6
3.....	2.0	2.2	2.5	2.85	4.2	3.8	5.2	4.5	3.5
4.....	2.05	2.15	2.5	3.2	4.1	3.7	5.4	4.4	3.5
5.....	2.1	2.2	2.45	2.8	4.0	3.6	5.4	4.3	3.5
6.....	2.15	2.15	2.5	2.8	3.8	3.5	5.4	4.3	3.9
7.....	2.35	2.1	2.45	2.85	3.8	3.5	5.3	4.0	3.7
8.....	2.35	2.1	2.45	3.4	3.8	3.4	5.2	3.9	3.8
9.....	2.4	2.1	2.4	4.0	3.7	3.3	5.0	4.0	4.1
10.....	2.35	2.15	2.45	3.0	3.5	3.3	4.9	3.9	4.0
11.....	2.35	2.15	2.35	3.1	3.5	3.2	4.7	3.7	3.1
12.....	2.35	2.05	2.8	2.95	3.3	3.0	4.7	3.6	3.7
13.....	2.35	2.0	2.35	2.9	3.2	3.0	4.7	3.6	3.6
14.....	2.35	1.95	2.3	2.8	3.2	3.0	4.7	3.0	3.4
15.....	2.35	2.0	2.4	3.1	3.2	2.9	4.8	3.4	3.4
16.....	2.35	2.05	2.35	3.2	3.4	2.9	4.8	3.2	3.6
17.....	2.25	2.1	2.8	3.2	3.0	2.8	4.8	4.2	3.2
18.....	2.2	2.0	2.3	3.3	3.0	3.0	4.9	5.6	3.3
19.....	2.35	2.1	2.3	3.2	2.95	3.0	5.0	6.0	3.7
20.....	2.35	2.15	2.35	3.1	3.1	3.0	4.9	6.0	3.7
21.....	2.4	2.0	2.35	3.1	2.9	2.9	4.8	5.8	3.5
22.....	2.35	2.3	2.35	2.9	2.75	2.95	4.8	5.5	3.4
23.....	2.35	2.3	2.3	2.65	2.75	2.85	5.0	5.2	3.7
24.....	2.3	2.3	2.3	2.65	2.9	2.75	5.4	5.1	3.6
25.....	2.3	2.0	2.3	2.65	2.7	2.75	5.7	4.8	3.4
26.....	2.3	1.65	2.15	2.85	2.95	2.65	5.7	4.5	3.2
27.....	2.3	1.32	2.05	3.0	3.5	2.7	5.6	4.5	3.2
28.....	2.25	2.35	2.0	3.1	3.6	2.7	5.4	4.4	3.1
29.....	2.25	2.45	3.2	3.5	3.9	3.1	5.2	3.9	3.0
30.....	2.25	2.5	2.65	3.8	.....	3.2	5.1	3.7	2.95
31.....	2.2	.....	2.6	4.0	.....	3.8	.....	3.7	.....

NOTE.—Discharge relation affected by ice, December 12 and 17, from December 29 to January 23 and from February 14 to 24; also affected by logs on control probably from March 30 to April 24 and from May 15 to June 11.

Daily discharge, in second-feet, of SCHROON RIVER AT RIVERBANK, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	388	427	535	535	1,640	1,550	1,740	2,370	1,060
2.....	388	407	535	560	1,740	1,370	2,150	2,260	1,060
3.....	333	407	535	585	1,740	1,370	2,720	2,040	990
4.....	351	388	535	610	1,640	1,290	2,960	1,940	990
5.....	369	407	512	635	1,550	1,210	2,960	1,840	990
6.....	388	388	535	635	1,370	1,130	2,960	1,840	1,290
7.....	468	369	512	662	1,370	1,130	2,840	1,550	1,130
8.....	468	369	512	662	1,370	1,060	2,720	1,460	1,210
9.....	490	369	490	690	1,290	990	2,480	1,550	1,460
10.....	468	388	512	690	1,130	990	2,370	1,460	1,370
11.....	468	388	468	772	1,130	920	2,150	1,290	745
12.....	468	351	468	718	990	800	2,150	1,210	1,290
13.....	468	333	468	635	920	800	2,150	1,210	1,210
14.....	468	316	447	610	860	800	2,150	800	1,060
15.....	468	333	490	585	860	745	2,260	1,660	1,060
16.....	468	351	468	560	860	745	2,260	860	1,210
17.....	427	369	460	535	800	690	2,260	1,550	920
18.....	407	333	447	535	772	800	2,370	3,080	990
19.....	468	369	447	512	745	800	2,480	3,600	1,290
20.....	468	388	468	512	718	800	2,370	3,600	1,290
21.....	490	333	468	535	690	745	2,260	3,340	1,130
22.....	468	447	468	585	662	772	2,260	2,840	1,060
23.....	468	447	447	610	662	718	2,480	2,600	1,290
24.....	447	447	447	610	662	662	2,960	2,370	1,210
25.....	447	338	447	610	635	662	3,340	2,150	1,060
26.....	447	216	369	718	772	610	3,470	1,840	920
27.....	447	125	351	800	1,130	635	3,340	1,840	920
28.....	437	468	333	860	1,310	635	3,080	1,740	860
29.....	427	512	407	1,130	1,460	860	2,840	1,290	800
30.....	427	535	535	1,370	.....	920	2,720	1,130	772
31.....	407	.....	535	1,550	.....	1,290	.....	1,130	.....
Mean....	438	377	473	697	1,080	920	2,680	1,900	1,060

NOTE.—Discharge relation affected by ice, December 12 and 17, from December 29 to January 22 and from February 14 to 24; also affected by logs on control probably from March 30 to April 24 and from May 15 to June 11. Daily discharge given in these periods is approximate.

Monthly discharge of SCHROON RIVER AT RIVERBANK, for the nine months ending June 30, 1916

[Drainage area, 534 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF		Accuracy
	Maximum	Minimum	Mean	Per square mile	Depth in inches on drainage area		
October.....	490	333	438	0.820	0.96	A	
November.....	535	125	377	0.706	0.79	A	
December.....	535	333	473	0.886	1.02	B	
January.....	1,550	512	697	1.30	1.50	C	
February.....	1,740	635	1,060	2.02	2.18	B	
March.....	1,550	610	920	1.72	1.98	B	
April.....	3,470	1,740	2,580	4.83	5.39	B	
May.....	3,600	800	1,900	3.56	4.10	B	
June.....	1,460	772	1,090	2.04	2.28	B	

Discharge measurements of SCHROON RIVER AT RIVERBANK, during the nine months  
ending June 30, 1916

DATE	Made by	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 13.....	E. D. Burchard.....	2.32	450
Dec. 29.....	E. D. Burchard.....	2.16	379
Jan. 12 <i>a</i> .....	E. D. Burchard.....	b 3.00	705
Jan. 26.....	E. D. Burchard.....	2.72	648
Feb. 16 <i>a</i> .....	E. D. Burchard.....	b 3.57	876
Mar. 4.....	E. D. Burchard.....	b 3.73	1,290
April 5.....	O. W. Hartwell.....	c 5.43	2,950
April 27.....	A. H. Davison.....	5.56	3,330
May 25.....	O. W. Hartwell.....	c 4.77	2,070
June 2.....	C. C. Covert.....	c 3.60	1,050

*a* Measurement made under partial ice cover at regular section.

*b* Discharge relation affected by ice.

*c* Discharge relation affected by logs on control.

## SACANDAGA RIVER

### DESCRIPTION

Sacandaga river is one of the larger tributaries of the upper Hudson. It drains extensive portions of the southeast slope of the Adirondack region as well as a portion of the plateau lying north of Mohawk river and south of the Adirondack mountains. The headwaters of the stream rise in the slopes surrounding Lake Pleasant, Sacandaga and Piseco lakes. It is formed by three principal branches, which unite in the southeastern part of Hamilton county. The west branch is the outlet at Piseco lake, the middle branch is the outlet of Sacandaga and Pleasant lakes, the east and principal branch issues from a series of small ponds and lakes in the southwestern part of Warren county. Sacandaga lake, the highest of the tributary lakes in the headwaters, is about 1,700 feet above mean tide. The east and middle branches unite a few miles north of Wells and are joined by the west branch a short distance below Wells. The river then flows southeasterly to a point about five miles below Northville. Above Northville the drainage basin is rugged and almost completely forest-covered. From Northville to Conklingville the stream winds through a sandy valley flanked by steep slopes. The width of this valley averages about one mile from Northampton to Conklingville. Above Northampton is an extensive flat lying at an elevation of about 740 feet. This flat is drained by Mayville, Vly and Hann's

creeks and contains extensive swamp areas. From Northville to Conklingville, a distance along the general course of the stream of about 22 miles, there is very little fall. The elevation at Conklingville is about 720 feet. Sacandaga river enters Hudson river at Luzerne at elevation about 540 feet. Between Northville and the mouth of the river there is a fall of about 180 feet (chiefly concentrated in the five miles below Conklingville) entirely unutilized. There are, in fact, no power developments on the Sacandaga.

The drainage area of this river, about 1,060 square miles, is largely in forest. The mean precipitation is high, being about 49 inches, whereas the mean for the whole Hudson drainage area above Mechanicville is only about 43 inches.

#### SACANDAGA RIVER NEAR HOPE

**Location.**—About  $3\frac{1}{2}$  miles above the post office at Hope, Hamilton county, 4 miles below the village of Wells, 12 miles above Northville (the nearest railroad station), and  $1\frac{1}{2}$  miles below the junction of the east and west branches of the Sacandaga.

**Records available.**—September 15, 1911, to June 30, 1916.

**Drainage area.**—494 square miles. (Measured on United States Geological Survey topographic maps.)

**Gage.**—Staff in two sections — a sloping staff reading from 1.0 to 4.3 feet and a vertical staff graduated above 4.3 attached to a rocky cliff in line with the sloping gage.

**Control.**—Regular and permanent.

**Discharge measurements.**—Made from a cable with a span of 214 feet during high stages and by wading at low stages.

**Winter flow.**—Discharge relation affected by ice. Gage observations suspended during winter.

**Extremes of discharge.**—Current period: Maximum stage recorded, 7.6 feet at 6 P. M., May 17; discharge, 11,800 second-feet. Minimum stage recorded, 2.1 feet, from 6 P. M., October 1, to 7 A. M., October 2; discharge, 256 second-feet.

1911–1916: Maximum stage recorded, 10.0 feet at 5:30 P. M., March 27, 1913; discharge, 24,800 second-feet. Minimum stage recorded, 1.17 feet at 7:55 A. M., September 20, 1915; discharge, 20 second-feet.

**Accuracy.**—The open-water rating curve is very well defined and estimates for this period are good.

**Cooperation.**—Established and maintained by the United States Geological Survey in coöperation with the State Conservation Commission.

Discharge measurements of SACANDAGA RIVER NEAR HOPE, during the nine months ending June 30, 1916

DATE	Made by	Gage height	Discharge
Mar. 10 a.....	E. D. Burchard.....	<i>Feet</i> 2.88	<i>Sec.-ft.</i> 650
May 6.....	E. D. Burchard.....	3.6	1,700

a Measurement made under partial ice cover at regular section.

b Discharge relation affected by ice.

Daily gage height, in feet, of SACANDAGA RIVER NEAR HOPE, for the nine months ending June 30, 1916. Melvin Willis, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	2.12	2.41	3.45	3.2	4.1	3.7	5.1	5.2	2.6
2.....	2.18	2.38	3.3	3.1	4.0	3.5	5.3	5.2	3.45
3.....	2.32	2.32	3.3	3.05	3.8	3.4	5.2	5.5	3.4
4.....	2.28	2.31	2.6	3.0	3.8	3.2	5.0	5.6	3.25
5.....	3.4	2.42	2.7	3.25	3.7	3.1	4.8	5.0	3.0
6.....	3.5	2.38	2.65	3.7	3.6	3.05	4.4	4.2	2.8
7.....	3.2	2.32	2.65	3.6	3.5	3.0	4.2	3.7	2.7
8.....	3.1	2.29	2.6	3.5	3.3	3.0	4.2	3.6	2.7
9.....	3.0	2.28	3.0	3.3	3.2	2.95	3.8	4.6	3.1
10.....	2.85	2.29	2.9	3.3	3.15	2.85	3.45	5.1	3.0
11.....	2.7	2.26	2.85	3.2	3.1	2.85	3.6	5.0	3.0
12.....	2.6	2.25	2.8	3.1	3.0	2.85	4.2	4.6	2.9
13.....	2.48	2.25	2.8	3.2	2.9	2.8	4.2	3.8	2.8
14.....	2.5	2.25	2.65	3.3	2.85	2.6	4.9	2.15	2.75
15.....	3.4	2.42	2.6	3.25	2.75	2.75	5.9	4.4	2.7
16.....	3.1	2.75	2.55	3.25	2.75	2.75	5.5	5.0	3.0
17.....	3.0	2.6	2.6	3.2	2.7	2.7	5.4	6.8	4.0
18.....	2.9	2.7	2.8	3.3	2.7	2.65	5.5	6.2	3.7
19.....	2.95	3.0	3.05	3.25	2.65	2.6	5.5	5.2	3.6
20.....	3.25	4.2	2.9	3.2	2.6	2.6	5.4	4.9	3.5
21.....	3.2	4.1	2.8	3.25	2.6	2.55	5.4	4.8	3.4
22.....	3.1	3.6	2.8	3.6	2.6	2.55	5.4	3.9	3.35
23.....	2.9	3.4	2.75	4.0	2.55	2.55	5.4	4.1	3.3
24.....	2.7	3.25	2.75	3.9	2.5	2.55	5.6	4.1	3.3
25.....	2.6	3.05	2.8	3.8	2.5	2.6	5.8	3.9	3.3
26.....	2.6	2.9	4.0	3.7	4.0	2.6	5.9	3.7	3.2
27.....	2.7	2.9	3.9	4.2	4.0	3.0	5.6	3.5	3.1
28.....	2.65	2.8	3.8	4.2	3.9	3.5	5.8	2.45	2.25
29.....	2.6	3.2	3.35	4.9	3.8	4.0	5.9	3.4	3.05
30.....	2.55	3.5	3.4	4.5	.....	4.4	5.2	3.5	2.8
31.....	2.48	.....	3.25	4.3	.....	4.8	.....	3.9	.....

NOTE.—Discharge relation affected by ice, December 9 to 17, January 15 to 21 and February 19 to March 29, all inclusive.

## Daily discharge, in second-feet, of SACANDAGA RIVER NEAR HOPE, for the year ending September 30, 1915

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1.....	116	116	865			1,940	495	1,680	865	2,930	454	780
2.....	116	116	1,440			1,680	525	1,680	910	1,680	421	660
3.....	111	116	1,680			1,560	495	1,940	740	1,440	421	590
4.....	104	116	1,380			1,440	525	1,680	438	1,280	1,060	495
5.....	104	147	1,010			1,380	525	1,940	255	1,560	1,160	454
6.....	96	154	1,010			1,220	525	1,680	242	1,560	960	400
7.....	91	147	780			1,010	660	1,380	221	1,220	980	380
8.....	91	147	740			910	1,160	1,220	221	2,560	1,110	365
9.....	91	147	590			910	1,680	1,060	202	4,230	1,010	360
10.....	91	147	590			820	3,760	1,010	190	2,560	910	360
11.....	91	147	525			780	7,530	910	190	1,940	820	350
12.....	91	182	400			740	8,830	740	230	1,560	740	330
13.....	91	190	438			660	4,960	820	221	1,560	660	335
14.....	87	287	454			590	4,990	740	221	1,440	558	400
15.....	81	465	410			590	4,230	820	410	1,110	495	385
16.....	81	2,390				660	4,230	865	400	910	525	454
17.....	116	1,680				660	3,990	910	350	780	525	421
18.....	175	960				590	3,330	3,540	301	740	410	350
19.....	287	1,010		3,540		558	2,230	1,810	242	700	370	320
20.....	310	910		2,930		525	2,230	1,010	350	660	320	310
21.....	287	780		2,080		495	1,940	1,110	301	590	301	400
22.....	230	660		1,680		495	2,060	1,220	255	495	2,560	421
23.....	190	558		1,590		525	2,230	1,010	242	438	5,790	400
24.....	164	465		1,440		590	1,560	1,440	242	410	3,760	350
25.....	164	525		1,330	5,790	740	1,160	1,440	221	400	3,130	301
26.....	147	525		1,110	4,480	660	1,010	1,330	196	465	2,230	310
27.....	147	1,010		1,010	3,540	660	865	1,110	182	1,110	1,810	454
28.....	147	1,220		910	2,390	590	820	820	182	700	1,440	400
29.....	144	910		700		590	1,220	590	182	740	1,160	350
30.....	135	780		660		590	1,280	410	221	660	1,010	320
31.....	122					454		360		590	910	
Mean...	188	567				825	2,370	1,230	313	1,260	1,230	407

NOTE.— Discharge relation affected by ice, December 9 to 17, January 15 to 21 and February 19 to March 29, all inclusive. Daily discharge given in these periods is approximate. A new rating has been computed, based on all discharge measurements, including those of 1916, and which probably is applicable to all previous gage heights. Above table based on this rating supercedes that published in Report of State Engineer for 1915, Vol. II, page 256.

## Monthly discharge of SACANDAGA RIVER NEAR HOPE, for the year ending September 30, 1915

(Drainage area, 494 square miles)

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF	
	Maximum	Minimum	Mean	Per square mile	Depth in inches on drainage area	Accuracy
October.....	310	81	138	0.279	0.32	A
November.....	2,390	116	567	1.15	1.28	B
December.....	1,680		545	1.10	1.27	C
January.....	3,540		996	2.02	2.33	D
February.....	5,790		1,340	2.71	2.82	D
March.....	1,940	454	825	1.67	1.92	A
April.....	8,830	495	2,370	4.80	5.38	A
May.....	3,540	360	1,230	2.49	2.87	A
June.....	865	182	314	0.636	0.71	B
July.....	4,230	400	1,260	2.55	2.94	A
August.....	5,790	301	1,230	2.49	2.87	A
September.....	780	301	407	0.824	0.92	B
The year.....	8,830	81	936	1.89	25.61	.....

NOTE.— Above table supercedes that published in Report of State Engineer for 1915, Vol. II, page 256.

Daily discharge, in second-feet, of SACANDAGA RIVER NEAR HOPE, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1	273	416	1,280	1,010	2,080	1,560	3,990	4,230	1,440
2	301	400	1,110	910	1,940	1,330	4,480	4,230	1,280
3	370	370	1,110	865	1,680	1,220	4,230	4,990	1,220
4	350	365	660	820	1,680	1,010	3,760	4,990	1,060
5	1,220	421	590	1,060	1,560	910	3,330	3,760	820
6	1,330	400	558	1,560	1,440	865	2,560	2,230	660
7	1,010	370	558	1,440	1,330	820	2,230	1,560	590
8	910	355	525	1,330	1,110	820	2,230	1,440	590
9	820	350	820	1,110	1,010	780	1,680	2,930	910
10	700	355	740	1,110	960	700	1,280	3,990	820
11	590	340	700	1,010	910	700	1,440	3,760	820
12	525	335	660	910	820	700	2,230	2,930	740
13	454	335	660	1,010	740	660	2,390	1,680	660
14	465	335	558	1,110	700	660	3,540	960	625
15	1,220	421	525	1,060	625	625	6,070	2,560	590
16	910	625	495	1,060	625	625	4,990	3,760	820
17	820	660	525	1,010	590	590	4,730	8,830	1,940
18	740	590	660	1,110	590	558	4,990	6,930	1,560
19	780	820	865	1,060	558	525	4,990	4,230	1,440
20	1,060	2,230	740	1,010	525	525	4,730	3,540	1,330
21	1,010	2,080	660	1,060	525	495	4,730	3,330	1,220
22	910	1,440	660	1,440	525	495	4,730	1,810	1,160
23	740	1,220	625	1,940	495	495	4,730	2,080	1,110
24	590	1,060	625	1,810	465	495	5,250	2,080	1,110
25	525	865	660	1,680	465	525	5,790	1,810	1,110
26	525	740	1,940	1,560	1,940	525	6,070	1,560	1,010
27	590	740	1,810	2,230	1,940	820	5,250	1,330	910
28	558	660	1,680	6,930	1,810	1,330	5,790	1,280	1,060
29	525	1,010	1,160	3,540	1,680	1,940	6,070	1,220	865
30	495	1,330	1,220	2,740	.....	2,560	4,230	1,330	660
31	454	.....	1,060	2,390	.....	3,330	.....	1,810	.....
Mean	702	721	853	1,580	1,080	942	4,080	3,000	1,000

Monthly discharge of SACANDAGA RIVER NEAR HOPE, for the nine months ending June 30, 1916

[Drainage area, 494 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF	Accu- racy
	Maximum	Minimum	Mean	Per square mile	Depth in inches on drainage area	
October.....	1,330	273	702	1.42	1.64	A
November.....	2,230	335	721	1.46	1.63	A
December.....	1,940	495	853	1.73	1.99	B
January.....	6,930	820	1,580	3.20	3.69	D
February.....	2,080	465	1,080	2.19	2.36	C
March.....	3,330	495	942	1.90	2.19	C
April.....	6,070	1,280	4,080	8.26	9.22	A
May.....	8,830	960	3,000	6.07	7.00	A
June.....	1,940	590	1,000	2.02	2.25	A

**SACANDAGA RIVER NEAR HADLEY**

**Location.**—About half a mile west of the railroad station at Hadley, Saratoga county, 1 mile above the confluence of Sacandaga river with the Hudson, and  $4\frac{1}{2}$  miles below the site of the proposed storage dam at Conklingville. No tributaries between this station and the mouth of the river.

**Records available.**—September 13, 1907, to June 30, 1916.

**Drainage area.**—1,060 square miles. (Measured on United States Geological Survey topographic maps.)

**Gage.**—Water-stage recorder; 30 feet downstream from the cable, in a concrete house over a well of the same material, 3 feet square, inside dimension. The well is connected with the river by a 4-inch cast-iron water pipe.

**Control.**—Very rough but permanent.

**Discharge measurements.**—Made from the cable at medium and high stages and wading about three-fourths mile upstream at low stages. The channel at the cable has been cleared of boulders.

**Winter flow.**—The water in the well and in the intake pipe never freezes over because its level is below the frost line. The discharge relation is, however, considerably affected by ice. Flow determined by frequent discharge measurements and climatologic data.

**Extremes of discharge.**—Current period: Maximum stage from water-stage recorder, 8.2 feet at 6:00 p. m., April 3; discharge, 11,300 second-feet. Minimum stage from water-stage recorder, 3.42 feet at 4 p. m., October 2; discharge, 637 second-feet.

1911–1916: Maximum stage from water-stage recorder, 12.36 feet from 11 a. m. to 12 o'clock noon, March 28, 1913; discharge, approximately 35,500 second-feet. Minimum stage from water-stage recorder, 2.25 feet all day September 16, 1913; discharge, 61 second-feet.

**Accuracy.**—The discharge rating curve that has been developed for this station is well defined.

**Coöperation.**—Established and maintained by the United States Geological Survey in coöperation with the State Conservation Commission.



**Discharge measurements of SACANDAGA RIVER NEAR HADLEY, during the nine months  
ending June 30, 1916**

DATE	Made by	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 9.....	O. W. Hartwell.....	4.30	1,530
Dec. 30 a.....	E. D. Burchard.....	c 5.24	2,580
Jan. 11 b.....	E. D. Burchard.....	c 4.95	2,000
Jan. 24 b.....	E. D. Burchard.....	c 5.91	2,860
Feb. 1.....	E. D. Burchard.....	c 6.40	5,440
Feb. 10.....	E. D. Burchard.....	4.66	2,050
Feb. 18 b.....	E. D. Burchard.....	c 4.17	1,310
Mar. 2 b.....	E. D. Burchard.....	c 5.12	2,610
Mar. 15.....	O. W. Hartwell.....	3.87	1,090
April 4.....	O. W. Hartwell.....	7.96	10,500

a Measurement made under complete ice cover at regular section.

b Measurement made under partial ice cover at regular section.

c Discharge relation affected by ice.

**Daily gage height, in feet, of SACANDAGA RIVER NEAR HADLEY, for the nine months  
ending June 30, 1916. J. F. Kelly, Observer**

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	3.51	3.78	4.7	5.0	6.4	5.3	6.4	6.5	4.7
2.....	3.45	3.72	4.6	4.8	6.35	5.15	7.0	6.8	4.7
3.....	3.53	3.68	4.5	4.65	6.25	4.95	7.6	6.15	4.5
4.....	3.64	3.64	4.21	4.6	6.1	4.75	8.0	6.08	4.5
5.....	3.72	3.61	3.85	4.46	5.8	4.6	7.6	5.9	4.42
6.....	4.38	3.62	3.92	4.6	.....	4.47	7.3	5.75	4.19
7.....	4.7	3.62	3.93	5.15	.....	4.30	7.2	5.55	4.05
8.....	4.48	3.60	3.93	5.4	.....	4.21	7.0	5.45	4.01
9.....	4.20	3.60	3.94	5.35	.....	4.18	6.7	5.28	4.02
10.....	4.16	3.60	3.86	5.2	4.65	4.10	6.4	5.3	4.32
11.....	4.00	3.58	3.84	4.95	4.5	4.05	6.15	5.25	4.47
12.....	3.86	3.56	3.90	4.75	4.33	3.96	6.15	5.1	4.43
13.....	3.73	3.53	3.85	4.7	4.28	3.93	6.4	4.95	4.32
14.....	3.63	3.50	3.70	4.8	4.36	3.91	6.55	4.8	4.31
15.....	3.95	3.53	3.96	4.9	4.32	3.87	6.65	4.65	4.32
16.....	4.55	3.87	4.30	4.8	4.32	3.89	6.75	4.65	4.22
17.....	4.48	4.13	4.6	4.6	4.28	3.89	6.95	5.5	4.9
18.....	4.29	4.10	4.4	4.6	4.15	3.84	7.2	6.7	5.55
19.....	4.19	4.03	4.55	4.55	4.10	3.80	7.2	7.3	5.6
20.....	4.38	4.66	4.8	4.6	4.08	3.90	7.1	7.3	5.6
21.....	4.60	5.45	4.8	4.47	3.99	3.76	7.0	6.95	5.4
22.....	4.39	6.45	4.8	4.38	3.98	3.73	7.0	6.6	5.2
23.....	4.23	5.2	4.65	5.0	3.90	3.75	7.2	6.2	4.95
24.....	4.11	4.95	4.6	5.85	3.93	3.76	7.3	5.95	4.85
25.....	3.99	4.7	4.55	5.85	3.90	3.70	7.4	5.8	4.65
26.....	3.89	4.46	4.85	5.65	4.55	3.77	7.4	5.55	4.6
27.....	3.89	4.31	5.4	5.7	6.25	3.90	7.3	5.2	4.5
28.....	3.98	4.22	5.5	6.2	5.4	4.25	7.1	4.95	4.39
29.....	3.98	4.26	5.6	6.6	5.4	4.85	6.9	4.75	4.36
30.....	3.91	4.6	5.25	6.9	.....	5.45	6.7	4.65	4.21
31.....	3.84	.....	5.2	6.65	.....	5.9	.....	4.6	.....

NOTE.—Discharge relation affected by ice, December 15 to January 31 and February 11 to March 13, both inclusive.

Daily discharge, in second-feet, of SACANDAGA RIVER NEAR HADLEY, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	706	938	2,050	2,210	5,590	2,890	5,590	5,850	2,080
2.....	690	882	1,900	1,900	5,460	2,620	7,280	5,320	2,050
3.....	722	847	1,760	1,720	5,200	2,370	9,160	4,960	1,760
4.....	812	812	1,400	1,600	4,840	2,050	10,600	4,720	1,760
5.....	882	787	1,010	1,460	4,130	1,780	9,160	4,360	1,660
6.....	1,600	795	1,080	1,600	.....	1,620	8,180	4,020	1,370
7.....	2,050	795	1,090	2,370	.....	1,420	7,880	3,580	1,220
8.....	1,730	778	1,090	2,800	.....	1,330	7,280	3,370	1,170
9.....	1,500	778	1,100	2,620	.....	1,270	6,400	3,180	1,180
10.....	1,340	778	1,020	2,370	1,990	1,230	5,590	3,080	1,530
11.....	1,160	762	998	1,980	1,760	1,180	4,960	2,990	1,720
12.....	1,020	746	1,060	1,700	1,520	1,100	4,960	2,710	1,670
13.....	892	722	1,010	1,620	1,460	1,090	5,590	2,460	1,530
14.....	804	698	864	1,760	1,530	1,070	5,980	2,210	1,520
15.....	1,110	722	958	1,990	1,490	1,020	6,260	1,980	1,530
16.....	1,830	1,020	1,060	1,710	1,490	1,040	6,540	1,980	1,410
17.....	1,730	1,300	1,220	1,430	1,430	1,040	7,130	3,470	2,370
18.....	1,490	1,290	1,380	1,410	1,280	998	7,880	6,400	8,580
19.....	1,370	1,190	1,580	1,330	1,220	958	7,880	8,180	3,680
20.....	1,600	1,980	1,900	1,290	1,130	958	7,580	8,180	3,470
21.....	1,760	3,370	1,900	1,240	1,080	918	7,280	7,130	3,270
22.....	1,620	3,370	1,900	1,140	1,070	892	7,280	6,120	2,890
23.....	1,420	2,890	1,700	1,470	988	910	7,880	5,080	2,460
24.....	1,290	2,460	1,698	2,710	1,020	919	8,180	4,490	2,290
25.....	1,150	2,050	1,570	2,890	988	864	8,500	4,130	1,980
26.....	1,040	1,710	1,980	2,620	1,720	928	8,500	3,580	1,900
27.....	1,040	1,520	2,890	2,890	2,800	1,060	8,180	2,890	1,760
28.....	1,140	1,410	2,980	4,020	3,180	1,430	7,580	2,460	1,620
29.....	1,140	1,460	2,800	5,200	3,180	2,290	6,980	2,130	1,580
30.....	1,070	1,900	2,620	5,980	.....	3,370	6,400	1,980	1,400
31.....	998	.....	2,540	5,850	.....	4,360	.....	1,900	.....
Mean....	1,250	1,360	1,610	2,350	2,380	1,510	7,290	4,030	1,980

NOTE.—Discharge relation affected by ice, December 15 to January 31 and February 11 to March 13, both inclusive. Daily discharge given in these periods is approximate. Mean discharge, February 6 to 9, inclusive, estimated, 2,890 second-feet.

Monthly discharge of SACANDAGA RIVER NEAR HADLEY, for the nine months ending June 30, 1916

[Drainage area, 1,060 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF	Accu- racy
	Maximum	Minimum	Mean	Per square mile	Depth in inches on drainage area	
October.....	2,050	660	1,250	1.18	1.36	A
November.....	3,370	698	1,360	1.28	1.43	A
December.....	2,980	864	1,610	1.52	1.75	C
January.....	5,980	1,140	2,350	2.22	2.56	B
February.....	5,590	986	2,380	2.25	2.43	B
March.....	4,360	864	1,510	1.42	1.64	B
April.....	10,600	4,960	7,290	6.88	7.68	A
May.....	8,180	1,900	4,030	3.80	4.38	A
June.....	3,680	1,170	1,980	1.87	2.09	A

### WEST BRANCH OF SACANDAGA RIVER AT BLACKBRIDGE, NEAR WELLS

**Location.**— At the highway bridge known as Blackbridge, about 3 miles west of Wells, Hamilton county, and 2 miles above the junction of the east and west branches of Sacandaga river.

**Records available.**— March 14, 1911, to June 30, 1916.

**Drainage area.**— 211 square miles. (Measured on United States Geological Survey topographic maps.)

**Gage.**— Chain; attached to upstream side of the highway bridge; read twice daily; datum unchanged.

**Control.**— Rocky and rough.

**Discharge measurements.**— Made from the bridge or by wading.

**Regulation.**— Gage heights slightly affected by storage dams used for logging in the spring.

**Winter flow.**— Discharge relation affected by ice. Gage observations suspended during the frozen period.

**Extremes of discharge.**— Current period: Maximum stage recorded, 8.0 feet at 4 P. M., May 17; discharge, 3,680 second-feet. Minimum stage recorded, 3.20 feet at 4 P. M., October 1; discharge, 107 second-feet.

1911-1916: Maximum stage recorded, 11.5 feet at 4 P. M., March 27, 1913; discharge, approximately 29,000 second-feet. Minimum stage recorded, 2.30 feet, September 17 and 21, 1913; discharge, 3 second-feet.

**Coöperation.**— Established and maintained by the United States Geological Survey in coöperation with the State Conservation Commission.

Discharge measurements of WEST BRANCH OF SACANDAGA RIVER AT BLACKBRIDGE, NEAR WELLS, during 1916

DATE	Made by	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>
Mar. 10.....	E. D. Burchard.....	b 5.14	261
May 5.....	E. D. Burchard.....	5.70	1,330
May 5.....	E. D. Burchard.....	5.70	1,320
Aug. 22 a.....	C. C. Covert.....	2.68	30.4
Nov. 10.....	A. H. Davison.....	3.78	210
Nov. 10.....	A. H. Davison.....	3.78	238

a Measurement made by wading 1 mile above gage.

b Discharge relation affected by ice.

Daily gage height, in feet, of WEST BRANCH OF SACANDAGA RIVER AT BLACKBRIDGE, NEAR WELLS, for the nine months ending June 30, 1916. Cornelius DeGroff, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	3.35	3.7	4.25	4.6	4.9	4.7	5.4	6.2	5.2
2.....	3.5	3.6	4.2	4.6	5.4	4.8	6.3	6.0	5.2
3.....	3.7	3.7	4.0	4.35	5.4	4.7	5.2	6.0	4.8
4.....	3.6	3.7	3.8	4.25	5.0	4.8	5.6	6.2	4.2
5.....	3.9	3.6	3.9	4.5	4.8	4.5	5.4	5.9	3.8
6.....	4.7	3.7	3.9	4.8	4.75	4.8	5.2	5.5	3.7
7.....	4.6	3.5	3.7	4.75	4.5	4.5	5.0	5.4	3.6
8.....	4.55	3.48	3.7	4.7	4.3	4.7	4.9	5.2	3.6
9.....	4.3	3.5	3.6	4.7	4.3	4.6	4.7	5.4	3.85
10.....	4.2	3.6	3.55	4.6	4.2	5.2	4.55	5.4	3.9
11.....	4.05	3.5	3.5	4.7	4.1	4.9	4.6	5.4	3.9
12.....	3.75	3.42	3.5	4.6	4.0	5.4	4.85	5.3	3.8
13.....	3.55	3.5	3.6	4.6	3.9	4.3	5.0	5.2	3.7
14.....	3.7	3.42	3.5	4.5	3.8	4.8	4.8	5.0	3.8
15.....	4.65	3.65	3.6	4.5	3.7	4.2	5.2	4.9	3.75
16.....	4.7	4.1	3.8	4.4	3.4	4.1	5.6	5.2	3.95
17.....	4.6	4.0	4.5	4.2	3.9	4.85	6.2	7.7	5.2
18.....	4.4	3.9	4.8	4.2	3.9	5.6	6.2	6.4	5.2
19.....	4.5	4.35	4.05	4.5	3.7	5.6	6.2	6.2	3.95
20.....	4.6	4.9	4.1	4.65	3.6	5.5	6.2	6.6	4.5
21.....	4.6	4.7	3.9	4.4	3.4	4.2	6.2	5.8	4.25
22.....	4.4	4.6	4.25	4.4	3.8	4.8	6.3	5.3	4.6
23.....	4.3	4.55	4.2	4.9	3.4	4.3	6.7	4.9	5.0
24.....	4.2	4.45	4.1	5.1	3.8	4.1	6.5	4.75	5.1
25.....	4.3	4.3	3.8	5.9	3.7	3.85	6.6	4.55	4.85
26.....	4.0	4.2	4.8	5.9	4.8	3.8	6.6	4.45	4.7
27.....	4.15	4.05	4.9	5.4	4.6	4.0	6.6	4.4	4.5
28.....	3.95	4.1	5.6	5.4	4.6	4.3	6.4	4.3	4.2
29.....	3.7	4.5	5.6	5.5	4.8	4.8	6.4	4.4	4.3
30.....	3.8	4.4	4.65	5.4	.....	4.8	6.3	4.4	4.05
31.....	3.8	.....	4.5	5.3	.....	4.9	.....	4.85	.....

NOTE.— Discharge relation probably affected by ice, December 28 to January 21 and from about February 28 to March 25.

Daily discharge, in second-feet, of WEST BRANCH OF SACANDAGA RIVER AT BLACKBRIDGE, NEAR WELLS, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	136	225	428	450	775	525	1,100	1,760	965
2.....	171	197	405	405	1,100	475	1,840	1,580	965
3.....	225	225	325	405	1,100	450	965	1,580	710
4.....	197	225	255	428	835	428	1,260	1,760	395
5.....	290	197	290	550	715	405	1,100	1,500	234
6.....	660	225	290	715	688	365	965	1,180	203
7.....	605	171	225	688	550	325	835	1,100	176
8.....	578	166	225	550	450	308	770	965	176
9.....	450	171	197	428	450	290	650	1,100	252
10.....	405	197	184	345	405	272	568	1,100	269
11.....	345	171	171	808	365	272	595	1,100	269
12.....	240	152	171	308	325	255	740	1,040	234
13.....	184	171	197	345	290	255	835	965	203
14.....	225	152	171	405	255	255	710	835	234
15.....	632	211	197	405	225	240	965	770	218
16.....	660	365	255	345	147	240	1,260	965	288
17.....	605	325	550	290	290	240	1,760	3,320	965
18.....	500	290	715	255	290	225	1,760	1,940	965
19.....	550	475	345	240	225	211	1,760	1,760	288
20.....	605	775	365	255	197	197	1,760	2,130	540

Daily discharge, in second-feet, of WEST BRANCH OF SACANDAGA RIVER AT BLACKBRIDGE, NEAR WELLS, for the nine months ending June 30, 1916 — *Continued*

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
21.....	605	660	290	325	147	184	1,700	1,420	418
22.....	500	605	428	500	255	171	1,840	1,040	595
23.....	450	578	405	775	147	184	2,230	770	835
24.....	405	525	365	900	255	184	2,040	680	900
25.....	450	450	255	1,500	225	211	2,130	568	740
26.....	325	405	715	1,500	715	234	2,130	515	650
27.....	385	345	775	1,100	605	309	2,130	490	540
28.....	308	365	688	1,100	578	440	1,940	440	395
29.....	225	580	605	1,180	550	710	1,940	490	440
30.....	255	500	550	1,100	.....	710	1,840	490	329
31.....	255	.....	475	1,040	.....	770	.....	740	.....
Mean....	401	336	371	617	454	334	1,410	1,160	480

NOTE.—Discharge relation probably affected by ice, December 28 to January 21 and from about February 28 to March 25. Daily discharge given in these periods is approximate. New rating used, beginning March 26.

Monthly discharge of WEST BRANCH OF SACANDAGA RIVER AT BLACKBRIDGE, NEAR WELLS, for the nine months ending June 30, 1916  
[Drainage area, 211 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF	
	Maximum	Minimum	Mean	Per square mile	Depth in inches on drainage area	Accuracy
October.....	660	136	401	1.90	2.19	B
November.....	775	152	336	1.50	1.77	B
December.....	775	171	371	1.76	2.03	C
January.....	1,500	240	617	2.92	3.37	C
February.....	1,100	147	454	2.15	2.32	B
March.....	770	171	334	1.58	1.82	C
April.....	2,230	568	1,410	6.69	7.46	B
May.....	3,320	440	1,160	5.50	6.34	B
June.....	905	176	480	2.27	2.53	B

## HOOSIC RIVER

### DESCRIPTION

Hoosic river has its sources on the west slope of the Hoosic mountains in Vermont and Massachusetts. Two head branches, one flowing southward, the other northward along the west slope of this range, unite at North Adams, Mass., and the stream then flows northwestward, entering the Hudson three miles north of Mechanicville. Above Buskirk the drainage basin is rugged and precipitous, the distribution of tributaries affording rapid concentration of the run-off from the steep rock slopes. The ridges are sparsely wooded. The soil in the valleys is generally firm and tenacious. The general elevation of the valley at the junction of the headwaters is 1,000 feet. Numerous dams, affording

power for textile, agricultural implement and other industries, are scattered throughout the length of the stream from North Adams to Schaghticoke. The drainage basin contains no important lakes and but one storage reservoir, that at Farnum, near the head of the south branch.

#### HOOSIC RIVER AT HOOSICK FALLS

This station, established April 3, 1904, and maintained by this Department in coöperation with the United States Weather Bureau, is located on the Hoosic river above the dam at the factory of the Walter A. Wood Mowing & Reaping Machine Company, Hoosick Falls. The gage is a staff attached to the river end of the partition wall of the head-gate chamber on the left bank of the stream. Since July 14, 1908, the zero of the gage has been at the elevation of the crest of the dam, the gage reading from 0 to 5 feet above and below. Readings taken twice daily — at 7 A. M. and 5 P. M. — to tenths.

Daily gage height, in feet, of HOOSIC RIVER AT HOOSICK FALLS, for the nine months ending June 30, 1916. Sanford L. Cluett, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	0.1	0.1	0.2	0.9	1.5	0.6	2.05	0.85	0.2
2.....	0.05	0.1	0.2	0.8	1.25	0.55	2.6	0.75	0.2
3.....	0.1	0.1	0.2	0.75	1.25	0.45	1.75	0.7	0.2
4.....	0.1	0.1	0.2	0.7	1.1	0.4	1.45	0.65	0.15
5.....	0.1	0.1	0.2	0.6	1.0	0.4	1.3	0.6	0.3
6.....	0.1	0.1	0.2	1.2	0.75	0.35	1.25	0.6	0.35
7.....	0.1	0.1	0.2	1.15	0.45	0.3	1.2	0.6	0.2
8.....	0.1	0.1	0.2	0.95	0.45	0.25	1.05	0.7	0.2
9.....	0.1	0.1	0.1	0.75	0.45	0.2	0.95	1.1	0.2
10.....	0.1	0.1	0.1	0.6	0.4	0.3	0.95	0.85	0.2
11.....	0.1	0.05	0.1	0.55	0.35	0.3	0.95	0.65	0.25
12.....	0.1	0.05	0.1	0.45	0.35	0.3	0.95	0.55	0.25
13.....	0.1	0.05	0.1	0.4	0.35	0.3	0.95	0.55	0.2
14.....	0.1	0.1	0.1	0.3	0.3	0.25	1.1	0.85	0.2
15.....	0.1	0.15	0.1	0.3	0.3	0.2	1.7	0.55	0.2
16.....	0.1	0.15	0.1	0.3	0.3	0.2	1.55	0.5	0.2
17.....	0.1	0.1	0.1	0.2	0.3	0.2	1.4	0.55	0.2
18.....	0.1	0.1	2.35	0.2	0.25	0.2	1.25	1.05	0.25
19.....	0.1	0.1	1.85	0.2	0.25	0.2	1.25	0.8	0.5
20.....	0.1	0.4	1.2	0.2	0.2	0.2	1.05	0.7	0.55
21.....	0.1	0.5	0.95	0.2	0.2	0.2	1.0	0.6	0.35
22.....	0.1	0.35	0.8	1.65	0.2	0.2	1.0	0.5	0.2
23.....	0.1	0.3	0.7	2.5	0.2	0.2	1.1	0.55	0.2
24.....	0.1	0.2	0.65	1.05	0.2	0.2	1.45	0.65	0.2
25.....	0.1	0.2	0.65	0.8	0.25	0.2	1.2	0.55	0.2
26.....	0.1	0.2	2.85	1.1	1.7	0.2	1.05	0.4	0.25
27.....	0.15	0.2	1.95	1.4	1.0	0.35	0.95	0.4	0.2
28.....	0.25	0.2	1.25	1.85	0.75	0.75	0.95	0.4	0.15
29.....	0.2	0.2	1.15	1.6	0.65	1.2	0.9	0.35	0.1
30.....	0.1	0.2	1.1	1.2	.....	1.65	0.85	0.3	0.1
31.....	0.1	.....	1.05	0.95	.....	1.2	.....	0.25	.....

**HOOSIC RIVER NEAR EAGLE BRIDGE**

**Location.**—One and one-half miles above the village of Eagle Bridge, Rensselaer county, and one-half mile below the mouth of Walloomsac river. Owl kill enters the Hoosic at Eagle Bridge.

**Records available.**—August 13, 1910, to June 30, 1916. For the station formerly maintained at Buskirk, four miles below, records are available from September 25, 1903, to December 31, 1908.

**Drainage area.**—512 square miles. (Measured on United States Geological Survey topographic maps.)

**Gage.**—Sloping staff gage on left bank opposite James Russell's. This gage was installed August 17, 1914, and replaces a standard chain gage supported by cantilever arm on tree on the left bank about 400 feet upstream.

**Control.**—Gravel; likely to shift.

**Regulation.**—The dam of Walter A. Wood & Co. is located at Hoosick Falls, about two miles above the gage. Walloomsac river is also partly controlled, and the effect of the operation of the mills is observable at the gage. For this reason the gage heights should be used with caution.

**Extremes of discharge.**—Current period: Maximum stage recorded, 12.0 feet at noon, December 26; discharge, approximately 13,000 second-feet. Minimum stage recorded, 3.38 feet at 4:30 p. m., November 14; discharge, approximately 232 second-feet.

1910–1916: Maximum stage not recorded, since former gage could not be reached at high stage. Minimum stage recorded, 6.1 feet at 5 p. m., September 14, 1913; discharge, practically zero.

**Accuracy.**—Discharge rating curve fairly well defined. The accuracy of the estimates depends on the gage heights.

**Coöperation.**—Established and maintained by the United States Geological Survey in coöperation with the State Engineer and Surveyor.

Discharge measurements of HOOSIC RIVER NEAR EAGLE BRIDGE, during the nine months ending June 30, 1916

DATE	Made by	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>
Nov. 11 a	A. H. Davison	3.58	312
Nov. 11 b	A. H. Davison	3.40	260
Nov. 11 c	A. H. Davison	3.58	306
Nov. 20	E. D. Burchard	4.82	1,160
Nov. 20	E. D. Burchard	5.00	1,260
Dec. 24	A. H. Davison	5.41	1,710
Jan. 5	A. H. Davison	4.94	1,250
Jan. 28	E. D. Burchard	8.36	5,060
Jan. 28	E. D. Burchard	8.61	6,000
Jan. 28	E. D. Burchard	8.65	6,220
Jan. 29	E. D. Burchard	7.14	3,890
Jan. 29	E. D. Burchard	6.98	3,560
Feb. 21 c	E. D. Burchard	f 4.53	594
Mar. 9 d	A. H. Davison	f 7.20	946
Mar. 25 e	A. H. Davison	f 5.48	370
May 31 g	E. D. Burchard	4.34	736

a Measurement made by wading about 200 feet above gage. b Measurement made by wading 600 feet above gage. c Measurement made under partial ice cover at regular section. d Measurement made under complete ice cover at regular section. e Measurement made under complete ice cover 60 feet below gage. f Discharge relation affected by ice.

Daily gage height, in feet, of HOOSIC RIVER NEAR EAGLE BRIDGE, for the nine months ending June 30, 1916. Mrs. Vashti Russell, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1	3.8	3.95	4.2	5.4	7.4	8.2	8.8	5.8	4.25
2	3.7	2.70	4.1	5.2	6.4	8.0	9.9	5.6	4.15
3	3.8	3.85	4.15	5.2	5.9	7.8	8.0	5.5	4.0
4	3.9	3.75	4.05	5.0	5.7	7.3	6.8	5.3	4.5
5	3.75	3.85	3.75	5.0	5.4	7.0	6.6	5.0	4.3
6	4.4	3.95	4.1	5.9	5.2	7.0	6.3	5.1	4.45
7	4.05	3.7	3.9	5.4	5.3	6.8	6.4	4.85	4.25
8	4.15	3.85	3.9	5.0	5.1	6.8	5.9	5.1	4.1
9	4.05	3.8	3.8	5.0	5.2	6.7	5.6	6.0	4.05
10	3.9	3.8	3.8	4.9	5.2	6.7	5.6	5.3	4.1
11	3.95	3.6	3.8	4.95	5.1	6.6	5.6	5.0	4.0
12	3.7	3.8	3.6	4.9	5.1	6.6	6.0	4.7	4.2
13	3.8	3.85	4.1	4.8	4.85	6.7	6.0	4.7	4.1
14	3.65	3.55	3.75	4.95	5.1	6.4	6.3	4.55	4.2
15	4.05	3.85	3.85	4.45	.....	6.4	7.3	4.55	4.05
16	4.4	4.45	3.8	4.5	.....	6.9	6.5	4.5	4.15
17	3.95	4.3	4.0	4.55	.....	6.9	6.7	5.2	4.15
18	4.2	4.05	5.8	4.5	.....	6.8	7.0	6.0	5.0
19	3.8	4.0	8.4	4.5	.....	6.6	6.3	5.5	4.65
20	3.85	4.75	6.6	4.65	.....	6.6	6.2	5.1	4.85
21	3.75	4.25	5.9	4.5	.....	6.5	6.2	4.85	4.5
22	3.8	4.55	.....	7.4	.....	6.2	6.6	4.75	4.3
23	3.85	4.05	.....	7.2	.....	6.2	6.9	4.75	4.2
24	3.5	4.2	5.4	.....	.....	6.1	7.0	4.95	3.95
25	3.9	4.0	5.1	.....	.....	6.2	6.5	4.65	3.85
26	3.75	4.3	10.0	.....	.....	5.8	6.5	4.55	4.4
27	4.2	4.1	8.2	7.0	.....	6.0	6.1	4.4	4.2
28	4.1	4.0	6.9	8.4	.....	6.1	6.0	4.25	4.05
29	4.0	4.25	6.2	7.1	8.4	6.5	5.8	4.25	3.85
30	3.9	4.35	5.8	6.1	.....	7.9	5.7	4.1	3.8
31	4.1	.....	5.4	6.0	.....	8.8	.....	4.4	.....

NOTE.—Discharge relation affected by ice, January 9 to 20 and February 11 to March 29, both inclusive. Gage observations suspended, December 22 and 23, January 24 to 26 and February 15 to 28, all inclusive.



Daily discharge, in second-feet, of HOOSIC RIVER NEAR EAGLE BRIDGE, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1	420	498	645	1,090	4,170	1,160	6,390	2,120	678
2	370	370	595	1,490	2,820	1,040	8,440	1,900	615
3	420	445	615	1,490	2,230	960	5,090	1,790	525
4	470	395	555	1,290	2,010	845	3,330	1,590	860
5	395	445	395	1,290	1,690	810	3,070	1,290	710
6	780	498	585	2,230	1,490	775	2,700	1,390	820
7	555	370	470	1,690	1,590	705	2,820	1,160	678
8	615	445	470	1,290	1,390	670	2,230	1,390	585
9	555	420	420	1,080	1,490	638	1,900	2,340	555
10	470	420	420	920	1,490	605	1,900	1,590	585
11	498	325	420	845	1,260	575	1,900	1,290	525
12	370	420	325	775	1,040	545	2,340	1,020	645
13	420	445	585	705	880	545	2,340	1,020	585
14	348	302	395	670	810	615	2,700	900	645
15	555	445	445	638	740	485	4,020	900	555
16	780	820	420	638	670	458	2,940	860	615
17	498	710	525	605	638	430	3,200	1,490	615
18	645	555	2,120	605	605	430	3,600	2,340	1,290
19	420	525	5,740	605	605	402	2,700	1,790	980
20	445	1,060	3,070	638	605	402	2,580	1,390	1,160
21	395	678	2,230	880	605	375	2,580	1,160	860
22	420	900	1,990	4,170	605	375	3,070	1,060	710
23	445	555	1,790	3,680	605	375	3,460	1,060	645
24	280	645	1,680	2,460	605	375	3,680	1,240	498
25	470	525	1,390	2,120	670	375	2,940	980	445
26	395	710	8,640	2,340	4,930	375	2,940	900	780
27	645	585	5,410	3,600	1,900	458	2,460	780	645
28	585	525	3,460	5,740	1,490	670	2,340	678	555
29	525	678	2,580	3,740	1,300	1,300	2,120	678	445
30	470	745	2,120	2,460	.....	4,930	2,010	585	480
31	585	.....	1,690	2,340	.....	6,390	.....	780	.....
Mean	491	549	1,680	1,770	1,410	935	3,120	1,270	674

NOTE.— Discharge relation affected by ice, January 9 to 20 and February 11 to March 29, both inclusive. Daily discharge given in these periods is approximate.

Monthly discharge of HOOSIC RIVER NEAR EAGLE BRIDGE, for the nine months ending June 30, 1916

[Drainage area, 512 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF Depth in inches on drainage area	Accuracy
	Maximum	Minimum	Mean	Per square mile		
October	780	280	491	0.959	1.09	B
November	1,060	302	549	1.07	1.19	B
December	8,640	325	1,680	3.28	3.78	B
January	5,730	605	1,770	3.46	3.99	B
February	4,930	605	1,410	2.75	2.97	B
March	4,930	375	935	1.83	2.11	C
April	8,440	1,900	3,120	6.09	6.80	A
May	2,340	585	1,270	2.48	2.86	A
June	1,290	420	674	1.32	1.47	B

**HOOSIC RIVER AT SCHAGHTICOKE**

**Location.**— At the dam of the Schaghticoke power-plant of the Schenectady Power Company located at the highway bridge at Schaghticoke on the Hoosic river about  $6\frac{1}{2}$  miles above its confluence with the Hudson river. The power-plant is about 1 mile below the dam and connected therewith by a canal and steel penstock.

**Records available.**— December 1, 1908, to June 30, 1916.

**Drainage area.**— 635 square miles.

**Gage.**— Indicating water-surface above dam consists of a float operating contacts which by voltage drop indicates in the powerhouse the water-surface. Gage in the forebay at end of canal is a staff gage graduated to tenths.

**Control.**— Discharge estimates based on the flow over the dam and the flow through the wheels estimated from hourly readings reduced by curves furnished by water-wheel manufacturers, based upon tests after installation. There are 4 radial inward flow Francis type wheels manufactured by Pelton, each 5,000 hp.

**Extremes of discharge.**— Current period: Maximum mean daily discharge recorded, 6,719 second-feet on April 1. Minimum mean daily discharge recorded, 127 second-feet on October 24 and November 6.

1908–1916: Maximum stage recorded, approximately 25,000 second-feet February 6, 1909. Minimum stage recorded; 0 second-feet on a number of days due to interruption of flow by plants farther upstream.

**Regulation.**— During low stages discharge appreciably affected by local storage at power-plants above station.

**Coöperation.**— Established and maintained by the Schenectady Power Company, discharge reduced and furnished by Mr. E. B. Doen, Superintendent, Schaghticoke, N. Y.

Daily discharge, in second-feet, of HOOSIC RIVER AT SCHAGHTICOKE, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	266	382	578	1,544	3,000	1,000	6,719	1,808	604
2.....	368	335	555	1,439	2,507	1,023	6,219	1,449	390
3.....	405	295	462	1,370	2,022	1,000	4,009	1,262	530
4.....	405	295	578	1,490	1,571	855	3,166	1,231	763
5.....	500	334	266	1,948	1,643	566	2,224	1,236	1,238
6.....	706	127	451	2,149	1,500	680	3,065	964	800
7.....	648	439	465	1,503	1,208	638	2,342	727	544
8.....	410	277	405	1,019	1,079	607	1,922	1,143	500
9.....	451	324	380	904	1,134	608	1,547	1,405	428
10.....	370	277	243	1,273	1,128	662	*1,700	1,263	463
11.....	428	320	301	980	1,000	749	1,884	1,280	521
12.....	387	220	208	1,075	900	552	1,890	1,100	428
13.....	312	323	372	1,065	800	671	2,216	1,190	521
14.....	280	323	196	1,015	600	688	3,040	816	538
15.....	520	463	243	828	1,034	324	3,515	1,134	471
16.....	601	440	324	803	997	457	3,181	1,227	809
17.....	378	567	439	1,000	1,011	622	3,177	1,199	836
18.....	463	347	4,738	600	1,093	607	3,039	1,616	1,016
19.....	400	544	4,437	462	652	509	2,314	1,604	970
20.....	358	1,161	3,925	520	400	440	2,230	1,433	1,017
21.....	347	694	1,961	752	690	462	1,985	1,111	714
22.....	312	763	1,461	3,465	682	417	2,717	1,125	606
23.....	312	717	1,800	3,000	582	481	2,952	1,388	578
24.....	127	601	2,300	2,450	782	509	3,364	1,255	500
25.....	290	428	1,565	2,160	1,800	451	3,065	1,064	500
26.....	312	613	4,300	1,896	1,662	509	2,925	826	481
27.....	486	544	5,870	4,600	2,342	1,238	2,620	737	509
28.....	532	398	3,470	5,903	2,372	1,800	2,160	541	420
29.....	398	694	2,900	2,663	1,147	3,014	1,691	820	334
30.....	398	766	1,700	2,771	.....	6,130	1,329	540	360
31.....	335	.....	2,744	3,058	.....	5,810	.....	691	.....
Mean....	404	467	1,601	1,797	1,270	1,099	2,804	1,134	612

\* Estimated by Department of State Engineer.

Monthly discharge of HOOSIC RIVER AT SCHAGHTICOKE, for the nine months ending June 30, 1916

[Drainage area, 635 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF Depth in inches on drainage area
	Maximum	Minimum	Mean	Per square mile	
October.....	706	127	404	0.636	0.73
November.....	1,161	127	467	0.735	0.82
December.....	5,870	196	1,601	2.521	2.91
January.....	5,903	462	1,797	2.830	3.26
February.....	3,000	400	1,270	2.000	2.16
March.....	6,130	324	1,099	1.731	2.00
April.....	6,719	1,329	2,804	4.416	4.93
May.....	1,808	540	1,134	1.786	2.06
June.....	1,238	334	612	0.964	1.08

## MOHAWK RIVER

### DESCRIPTION

Mohawk river, the largest tributary of the Hudson, rises in the sandy hills south of Boonville, in central New York, about 40 miles from the east end of Lake Ontario. Its uppermost tributaries are fed by large springs. The river receives also considerable water brought in from the adjacent Black river drainage basin for the supply of Black River and Erie canals. The Mohawk flows southward until it reaches the city of Rome, at which point it turns toward the east, flowing across the state in a course nearly east until it enters the Hudson at Cohoes opposite North Troy. Its total length is about 140 miles and its drainage area comprises 3,486 square miles.

The immediate valley of the Mohawk is broad and open, at many places a mile or two in width, and the flats which border the stream have a rich alluvial soil, finely adapted to the raising of grass, grains and broom corn. Back of the flats there is a rise, usually gradual but in certain localities more or less abrupt, to hills which attain altitudes several hundred feet above the stream. The more elevated lands are covered with sandy and gravelly loam. Toward the mouth of the river the valley becomes contracted and the meadows disappear.

Above Rome the Mohawk flows through a deep gorge in shale rock. From Rome eastward to Little Falls the valley is deeply filled with alluvial deposits and the flood plains on either side become submerged during freshets, thus acting to some extent as storage reservoirs. At Little Falls the river cuts through a rocky gorge, whose walls rise precipitously 500 or 600 feet.

The Erie canal ran parallel to the Mohawk through most of its course below Rome and derived a part of its water-supply from the river. Feeder dams for purposes of diversion for the supply of the Black River and old Erie canals were located on the river at Delta, Rome, Little Falls, Rocky Rift and Rexford. A dam at Oriskany creek also diverted into the canal a portion of the flow of that tributary, as well as waters brought into the Mohawk basin from storage reservoirs located in the upper drainage basin of Chenango river near Hamilton, N. Y. There was also a diversion at the dam near the mouth of Schoharie creek, the largest tributary of the Mohawk.

The new Barge canal, now nearing completion by the State of New York, will utilize by canalization the greater portion of the river below Utica. The Barge canal leaves the north fork of the Mohawk river just above its junction with the Hudson river, where a low navigable surface at Elev. 15.2 is maintained by the Federal dam at Troy. The canal rises through five locks and reenters the river just above the new Crescent dam (dam No. 2) which is a curved concrete structure in two sections with an ogee crest totaling 1,486.2 feet at Elev. 184.0, final closure of which was made May 10, 1915, but by opening head-gates at the west end of the dam, the water-surface was kept below the crest until July 1, 1915, when gates were closed and first flow over the completed crest occurred. The head-gates were again opened from Oct. 11 to Dec. 4, 1915. This dam is about three-quarters of a mile above and is reached by the pool formed by the power dam of the Cohoes Company at Cohoes, the fixed crest of which was raised from an average elevation of 154.2 to about Elev. 157.0 in the summer of 1914. The pool formed by the Crescent dam extends about 10.2 miles upstream to the Vischer Ferry dam and submerges the old Dunsbach Ferry dam located about 4.6 miles upstream and which was partially removed during August, 1912.

The new Vischer Ferry dam (dam No. 3), final closure of which was made June 9, 1913, is a concrete structure with an ogee crest having a broken trace composed of three straight sections of lengths, from south to north, of 735.2, 681.8 and 501.7, a total of 1,918.7 feet. The middle section is a low weir on an island cut down to Elev. 210.0 above the weir and somewhat lower below. This dam maintains a pool with a low navigable surface at crest elevation 211.0 about 10.9 miles in length and submerges the old State dam at Rexford about 4.3 miles upstream, which had a crest 675 feet long at Elev. 209.5.

Between Schenectady and St. Johnsville there are eight movable dams of the Boulé gate and bridge type. During the winter and during flood stages the gates and their supports are raised leaving, except for either one or two piers, a channel entirely unobstructed and of an area practically equivalent to that existing at that point before the construction of the dam. The location of

these dams, clear span of openings, elevation of sill and pool, *i. e.* low water-surface to be maintained above dam during navigation season, and length of canalized pool above are as follows:

Scotia dam (No. 4) about three miles above N. Y. C. & H. R. R. R. bridge at Schenectady, openings 150-210-150 feet, sill Elev. 209.0, pool Elev. 225.0, 5 miles long.

Rotterdam dam (No. 5) about one and nine-tenths miles above the Boston & Maine bridge or Rotterdam Junction, openings 150-210-150 feet, sill Elev. 220.0, pool Elev. 240.0, 6 miles long.

Cranesville dam (No. 6) three and two-tenths miles below the Amsterdam-South Amsterdam highway bridge, openings 150-180-150 feet, sill Elev. 235.0, pool Elev. 255.0, 4.3 miles long.

Amsterdam dam (No. 7) one and one-tenth miles above the Amsterdam-South Amsterdam highway bridge, openings 180-210-180 feet, sill Elev. 247.0, pool Elev. 267.0, 4.3 miles long.

Tribes Hill dam (No. 8) just above the Tribes Hill-Fort Hunter highway bridge and just below the mouth of Schoharie creek, openings 240-240 feet, sill Elev. 262.0, pool Elev. 278.0, 9.6 miles long.

Yosts dam (No. 9) nine-tenths of a mile below the village of Yosts, openings 180-180 feet, sill Elev. 268.0, pool Elev. 286.0, 7.8 miles long.

Canajoharie dam (No. 10) about one-third mile above the Canajoharie-Palatine Bridge highway bridge, openings 210-210 feet, sill Elev. 276.0, pool Elev. 294.0, 3.4 miles long.

Fort Plain dam (No. 11) four-tenths of a mile above Fort Plain-Nelliston highway bridge, openings 210-210 feet, sill Elev. 284.0, pool Elev. 302.0, 6.6 miles long.

Although the above movable dams had been previously completed and operated to facilitate dredging operations, this portion of the canal was not opened to navigation until May, 1916.

From below new Barge canal lock No. 16 about one and four-tenths miles above St. Johnsville to above the old Rocky Rift feeder dam the canal follows a land-line. Opposite lock No. 16 at the end of the river dredging, the natural bed of the stream is maintained by the Mindenville retention dam, the crest of which is 300 feet long and at Elev. 300.5, a foot and a half below

the low navigable surface above the Fort Plain dam. The old Rocky Rift feeder dam (No. 12) has been raised from the old fixed crest averaging about Elev. 319.35 to Elev. 322.5, by the addition of a movable crest, consisting of steel trestles and small Boulé gates with a new fixed crest, at Elev. 319.5. The canalized pool above this dam extends to about 3,000 feet below the lower dam at Little Falls, a distance of about 3.7 miles. Castle creek enters the land-line of the Barge canal just above or west of the Indian Castle guard-gate and flows west through the canal entering the Mohawk river above the Rocky Rift dam.

The three existing dams at Little Falls are unchanged, the upper or State dam (No. 13) being used to maintain the canalized river pool at Elev. 363.0 and 3.2 miles in length to Jacksonburg, where the canal enters a land-line.

The canal reënters the river just above the Mohawk street bridge at Herkimer. Immediately below this bridge a new dam (No. 14) has been constructed to retain the canalized pool to the Frankfort retention dam, a distance of 4.6 miles and that of the land-line from Frankfort to lock No. 19 at Sterling creek at a low navigable surface of Elev. 383.0. The Herkimer dam is a needle dam 126 feet long with a sill at Elev. 374.0, except for 10.5 feet, which is at Elev. 379.0.

Above Frankfort, several bends in the river have been cut out to provide room for the land-line to Rome, and the existing bed of the stream is retained by the Frankfort retention dam, located just above the canal terminal spur at Frankfort and about 1,600 feet upstream from the highway bridge over the river on the Dyke road between Frankfort and North Frankfort. This dam is of concrete with an ogee crest having a broken profile as follows: 41 feet 6 inches at Elev. 381.0, flanked by two sections each 36 feet 9 inches long, at Elev. 386.0. For the passage of flood flows there is a paved crest at Elev. 389.0, 433 feet long at the north end of the concrete structure. At Rome, the Mohawk river enters the summit level of the Barge canal over a new retention dam, about 400 feet north of the canal having a concrete ogee crest 225 feet long at Elev. 427.0, and is diverted eastward along the canal prism for 3.2 miles, leaving it over a concrete spillway with an ogee crest 225 feet long at pool Elev. 420.0. There is also another and smaller spillway with paved

crest 88 feet in length at Elev. 420, about three-quarters of a mile east of where the river enters the canal. The section of the summit level utilized for the river can be cut off from the remaining portions during higher flow periods by the closure of guard-gates at each end.

The water-supply for the Rome summit level of the new canal will to a large extent come from the Mohawk. A high dam has been constructed across the Mohawk at Delta, 6 miles north of Rome, for the purpose of creating a reservoir to store water for the canal. The capacity is 2,750,000,000 cubic feet. This supply will be supplemented by a reservoir of 3,445,000,000 cubic feet capacity on West Canada creek at Hinckley. Hinckley water will be passed down West Canada creek and diverted by a new dam on the site of the old Morgan dam at Trenton Falls through a feeder canal to Nine-Mile creek and thence to the Barge canal.

The principal tributaries of the Mohawk below the source are, successively, Oriskany, West Canada, East Canada and Schoharie creeks.

Drainage areas of MOHAWK RIVER AND TRIBUTARIES  
(From U. S. G. S. topographic maps)

LIMITS	AREA IN SQUARE MILES			
	Place to place	Sub-total	Branch total	Total
<i>Lansingkill</i>				
Source to junction with West branch.....	29.41	.....	29.41	.....
<b>MOHAWK RIVER</b>				
Source of West branch to junction with East branch.....	19.25	19.25	.....	.....
Source of East branch to junction with West branch.....	15.16	34.41	.....	.....
Junction of East and West branches to and including first large creek to north.....	5.86	40.27	.....	.....
First creek below junction to and including second large creek to north.....	6.08	46.35	.....	.....
Second creek below junction to junction of Lansingkill, Hillside.....	3.40	49.75	49.75	79.16
Junction at Hillside to mouth of Stringer brook..	1.17	.....	.....	80.33
<i>Stringer Brook</i>				
Source to mouth.....	13.43	.....	13.43	93.76
<b>MOHAWK RIVER</b>				
Junction of Stringer brook to mouth of Big brook (Frenchville).....	3.02	.....	.....	96.78
<i>Big Brook</i>				
Source to mouth.....	22.86	.....	22.86	119.64



Drainage areas of MOHAWK RIVER AND TRIBUTARIES — *Continued*

(From U. S. G. S. topographic maps)

LIMITS	AREA IN SQUARE MILES			
	Place to place	Sub-total	Branch total	Total
<b>MOHAWK RIVER</b>				
Junction of Big brook (Frenchville) to State feeder dam at Delta (now submerged) . . . . .	16.25	.....	.....	135.89
State feeder dam at Delta to highway bridge below new Delta dam . . . . .	11.97	.....	.....	147.86
Highway bridge below new Delta dam to Ridge Mills dam . . . . .	7.74	.....	.....	155.60
Ridge Mills dam to Floyd Ave. bridge . . . . .	2.59	.....	.....	158.19
Floyd Ave. bridge to State dam at Rome . . . . .	2.55	.....	.....	160.74
State dam at Rome to mouth of Six-Mile creek . . . . .	26.40	.....	.....	187.14
<b>Six-Mile Creek (Oneida Co.)</b>				
Source to mouth . . . . .	14.94	.....	14.94	202.08
<b>MOHAWK RIVER</b>				
Mouth of Six-Mile creek to mouth of Nine-Mile creek . . . . .	5.20	.....	.....	207.37
<b>Nine-Mile Creek</b>				
Source to South Trenton . . . . .	19.62	.....	.....	.....
South Trenton to crossing of 500-foot contour . . . . .	6.54	26.16	.....	.....
Crossing of 500-foot contour to first bridge above Holland Patent . . . . .	2.49	23.65	.....	.....
First bridge above Holland Patent to first bridge below Holland Patent . . . . .	12.71	41.36	.....	.....
First bridge below Holland Patent to Stittville . . . . .	6.12	47.48	.....	.....
Stittville to first bridge below Stittville (Powell's bridge) . . . . .	11.59	59.07	.....	.....
Powell's bridge to third bridge below Stittville . . . . .	10.34	69.41	.....	.....
Third bridge below Stittville to mouth . . . . .	0.79	70.20	70.20	277.57
<b>MOHAWK RIVER</b>				
Mouth of Nine-Mile creek to mouth of Oriskany creek . . . . .	6.19	.....	.....	283.76
<b>Areas diverted from Chenango river basin*</b>				
Chenango river from source to junction with Eaton brook at Eaton . . . . .	25.25	.....	.....	25.25
Eaton brook from source to Eaton reservoir dam . . . . .	9.16	9.16	.....	.....
Eaton reservoir dam to junction with Chenango river at Eaton . . . . .	6.69	15.85	15.85	41.10
Chenango river, junction Eaton brook to head of feeder canal . . . . .	2.99	.....	.....	44.09
Bradley brook from source to Bradley reservoir dam . . . . .	3.04	.....	.....	.....
Bradley reservoir dam to head of feeder canal . . . . .	4.57	7.61	.....	.....
Kingsley brook from source to Kingsley reservoir dam . . . . .	5.12	.....	.....	.....
Kingsley reservoir dam to junction with Bradley brook feeder canal . . . . .	1.75	6.87	14.48	58.57
Head of feeder, Chenango river to junction of feeders, Woodman pond . . . . .	2.04	.....	.....	60.61
Payne brook from source to Madison reservoir dam . . . . .	8.73	.....	.....	.....
Madison reservoir dam to junction of feeders, Woodman pond . . . . .	2.04	10.77	10.77	71.38
Junction of feeders, Woodman pond to junction with Leland pond outlet . . . . .	3.26	.....	.....	74.64
Source, Leland creek to canal reservoir dam . . . . .	6.74	.....	.....	81.38
Junction with Leland pond outlet to natural watershed limits . . . . .	6.53	.....	.....	87.91

\* Not included in totals for Mohawk river areas.

Drainage areas of MOHAWK RIVER AND TRIBUTARIES — Continued  
(From U. S. G. S. topographic maps)

LIMITS	AREA IN SQUARE MILES			
	Place to place	Sub-total	Branch total	Total
<i>Oriskany Creek</i>				
Source of Oriskany creek to bridge at Solville...	7.84	.....	.....	.....
Solville to Oriskany Mills.....	13.27	21.11	.....	.....
Oriskany Mills to junction with Big Creek, Oneida county (Deansboro).....	16.54	37.65	.....	.....
Source of Big creek to junction with Oriskany creek (Deansboro).....	20.32	57.97	.....	.....
Junction with Big creek to Farmers Mills.....	14.09	72.06	.....	.....
Farmers Mills to Clinton.....	11.11	83.17	.....	.....
Clinton to Kirkland.....	4.73	87.90	.....	.....
Kirkland to dam above Clark Mills.....	5.76	93.66	.....	.....
Dam above Clark Mills to Walesville.....	9.92	103.58	.....	.....
Walesville to Colemans.....	36.99	140.57	.....	.....
Colemans to State dam above Oriskany.....	5.47	146.04	.....	.....
State dam above Oriskany to mouth of Oriskany creek.....	0.78	146.82	146.82	430.58
<i>MOHAWK RIVER</i>				
Mouth of Oriskany creek to mouth of Sauquoit creek.....	15.68	.....	.....	446.26
<i>Sauquoit Creek</i>				
Source of Sauquoit creek to Cassville.....	7.17	.....	.....	.....
Cassville to dam at Clayville.....	4.71	11.88	.....	.....
Dam at Clayville to dam at Sauquoit.....	12.54	24.42	.....	.....
Dam at Sauquoit to dam above Chadwick.....	4.28	28.70	.....	.....
Dam above Chadwick to 700-foot contour at Willowvale.....	3.72	32.42	.....	.....
700-foot contour at Willowvale to dam at Washington Mills.....	11.37	43.79	.....	.....
Dam at Washington Mills to dam above New Hartford.....	2.92	46.71	.....	.....
Dam above New Hartford to dam at Capron.....	1.52	48.23	.....	.....
Dam at Capron to dam below Capron.....	2.20	50.43	.....	.....
Dam below Capron to upper dam at New York Mills.....	0.49	50.92	.....	.....
Upper dam at New York Mills to mouth of Sauquoit creek.....	14.58	65.50	65.50	511.76
<i>MOHAWK RIVER</i>				
Mouth of Sauquoit creek to Black River R. R. bridge at Utica.....	13.09	.....	.....	524.85
Black River R. R. bridge at Utica to mouth of Reels creek.....	2.70	.....	.....	527.55
<i>Reels Creek</i>				
Source to mouth.....	9.69	.....	9.69	537.24
<i>Ballou Creek</i>				
Source to mouth.....	4.57	.....	4.57	541.81
<i>MOHAWK RIVER</i>				
Mouth of Ballou creek to mouth of Starch Factory creek.....	1.99	.....	.....	543.80
<i>Starch Factory Creek</i>				
Source to mouth.....	7.22	.....	.....	551.02
<i>MOHAWK RIVER</i>				
Mouth of Starch Factory creek to mouth of Sterling creek.....	30.93	.....	.....	581.95
<i>Sterling Creek</i>				
Source to mouth.....	19.94	.....	.....	601.89
<i>MOHAWK RIVER</i>				
Mouth of Sterling creek to mouth of Moyer creek.....	14.85	.....	.....	616.74
<i>Moyer Creek</i>				
Source to mouth.....	21.66	.....	.....	638.40

Drainage areas of MOHAWK RIVER AND TRIBUTARIES — *Continued*

(From U. S. G. S. topographic maps)

LIMITS	AREA IN SQUARE MILES			
	Place to place	Sub-total	Branch total	Total
MOHAWK RIVER				
Mouth of Moyer creek to mouth of Steels creek..	7.30	.....	.....	645.70
Steels Creek				
Source to mouth.....	29.54	.....	.....	675.24
MOHAWK RIVER				
Mouth to Steels creek to Mohawk-Herkimer road bridge.....	33.07	.....	.....	708.31
Mohawk-Herkimer road bridge to mouth of West Canada creek.....	7.51	.....	.....	715.82
West Canada Creek *				
Source to mouth.....	583.64	.....	.....	1,299.46
MOHAWK RIVER				
Mouth of West Canada creek to State dam at Little Falls.....	26.07	.....	.....	1,325.53
State dam at Little Falls to Gilberts dam.....	4.20	.....	.....	1,329.73
Gilberts dam to Rocky Rift feeder dam.....	11.82	.....	.....	1,341.55
Crum Creek				
Source to mouth.....	11.40	.....	.....	1,352.95
MOHAWK RIVER				
Mouth to Crum creek (feeder dam) to mouth of Nowadaga creek.....	0.27	.....	.....	1,353.22
Nowadaga Creek				
Source to mouth.....	32.43	.....	.....	1,385.65
MOHAWK RIVER				
Mouth of Nowadaga creek to mouth of East Canada creek.....	4.65	.....	.....	1,390.30
East Canada Creek *				
Source to mouth.....	a281.61	.....	.....	1,671.91
MOHAWK RIVER				
Mouth of East Canada creek to mouth of East Crum creek.....	0.59	.....	.....	1,672.50
East Crum Creek				
Source to mouth.....	15.55	.....	.....	1,688.05
MOHAWK RIVER				
Mouth of East Crum creek to mouth of Timmerman creek.....	3.31	.....	.....	1,691.36
Timmerman Creek				
Source to mouth.....	16.38	.....	.....	1,707.74
MOHAWK RIVER				
Mouth of Timmerman creek to mouth of Zimmerman creek.....	0.52	.....	.....	1,708.26
Zimmerman Creek				
Source to mouth.....	14.63	.....	.....	1,722.89
MOHAWK RIVER				
Mouth of Zimmerman creek to St. Johnsville bridge.....	0.54	.....	.....	1,723.43
St. Johnsville bridge to mouth of Garoga creek....	12.05	.....	.....	1,735.48

\* For subareas, see separate table following.

a 0.2 small, due to error in addition.

Drainage areas of MOHAWK RIVER AND TRIBUTARIES — *Continued*

(From U. S. G. S. topographic maps)

LIMITS	AREA IN SQUARE MILES			
	Place to place	Sub-total	Branch total	Total
<i>Garoga Creek</i>				
Source of Garoga creek to foot of East Garoga lake.....	10.44	.....	.....	.....
Foot of East Garoga lake to foot of pond, Newkirk Mills.....	3.18	13.62	.....	.....
Foot of pond, Newkirk Mills, to junction with Peck lake outlet.....	9.11	22.73	22.73	.....
Source of Woodworth lake to foot of Peck lake.....	16.29	.....	.....	.....
Foot of Peck lake to junction with Garoga creek.....	4.52	20.81	48.54	.....
Junction with Peck lake outlet to Rockwood.....	7.20	.....	50.74	.....
Rockwood to Garoga.....	2.19	.....	52.93	.....
Garoga to mouth of Sprite creek.....	4.99	.....	57.92	.....
Source of Sprite creek to mouth.....	14.13	.....	72.05	.....
Mouth of Sprite creek to fourth highway bridge above mouth.....	13.19	.....	85.24	.....
Fourth highway bridge above mouth to second highway bridge above mouth.....	7.78	.....	93.02	.....
Second highway bridge above mouth to first highway bridge above mouth.....	1.17	.....	94.19	.....
First highway bridge above mouth to mouth of Garoga creek.....	0.51	.....	94.70	1,830.18
<b>MOHAWK RIVER</b>				
Mouth of Garoga creek to Fort Plain.....	12.70	.....	.....	1,842.88
Fort Plain to Canajoharie.....	67.92	.....	.....	1,910.80
<i>Canajoharie Creek</i>				
Source to mouth.....	69.22	.....	69.22	1,980.02
<b>MOHAWK RIVER</b>				
Canajoharie to Sprakers.....	9.94	.....	.....	1,989.96
<i>Flat Creek</i>				
Source to mouth.....	49.11	.....	49.11	2,039.07
<b>MOHAWK RIVER</b>				
Sprakers to mouth of Yatesville creek.....	17.56	.....	.....	2,056.63
<i>Yatesville Creek</i>				
Source to mouth.....	12.71	.....	12.71	2,069.34
<b>MOHAWK RIVER</b>				
Mouth of Yatesville creek to mouth of Cayadutta creek.....	24.48	.....	.....	2,093.82
<i>Cayadutta Creek</i>				
Source of Cayadutta creek to Johnstown (Main street bridge).....	35.16	.....	.....	.....
Johnstown (Main street bridge) to dam above Sammons ville.....	2.84	38.00	.....	.....
Dam above Sammons ville to dam at Sammons ville.....	3.53	41.53	.....	.....
Dam at Sammons ville to dam two miles below Sammons ville.....	16.44	57.97	.....	.....
Dam below Sammons ville to mouth of Cayadutta creek.....	5.06	63.03	63.03	2,156.85
<b>MOHAWK RIVER</b>				
Mouth of Cayadutta creek to Fultonville bridge.....	0.68	.....	.....	2,157.53
Fultonville bridge to mouth of Schoharie creek.....	47.39	.....	.....	2,204.92
<i>Schoharie Creek*</i>				
Source to mouth.....	c 909.30	.....	.....	c 3,114.22
<b>MOHAWK RIVER</b>				
Mouth of Schoharie creek to mouth of Chuctanunda creek (Amsterdam).....	31.54	.....	.....	c 3,145.76

\* For subareas, see table following.

c As the result of a joint determination of drainage areas of Schoharie creek, based on independent computations by the engineers of the Board of Water Supply of the City of New York, and of the Department of State Engineer, these figures should be increased by about 21 square miles.

Drainage areas of MOHAWK RIVER AND TRIBUTARIES — *Concluded*

(From U. S. G. S. topographic maps)

LIMITS	AREA IN SQUARE MILES			
	Place to place	Sub-total	Branch total	Total
<i>South Chuctanunda Creek</i>				
Source to Minaville.....	22.62	22.62		
Minaville to mouth.....	10.41	33.03	33.03	c 3,178.79
<i>North Chuctanunda Creek</i>				
Source to dam, Amsterdam reservoir.....	8.76	8.76		
Dam, Amsterdam reservoir, to Hagaman.....	20.77	29.53		
Hagaman to Rockton.....	4.11	33.64		
Rockton to mouth.....	5.58	39.22	39.22	c 3,218.01
<i>MOHAWK RIVER</i>				
Amsterdam to Hoffman Ferry.....	43.59			c 3,261.60
Hoffman Ferry to Scotia bridge.....	52.44			c 3,314.04
Scotia bridge to mouth of Alplaus kill.....	24.37			c 3,338.41
<i>Alplaus Kill</i>				
Source to mouth.....	55.80		55.80	c 3,394.21
<i>MOHAWK RIVER</i>				
Mouth of Alplaus kill to Raxford Flats dam.....	1.23			c 3,395.44
Raxford Flats dam to Vischer Ferry dam.....	10.98			c 3,406.42
Vischer Ferry dam to Dunsbach Ferry dam.....	53.20			c 3,459.62
Dunsbach Ferry dam to Crescent aqueduct.....	10.25			c 3,469.87
Crescent aqueduct to Crescent dam.....	2.68			c 3,472.55
Crescent dam to Cohoes Co's. dam.....	0.61			c 3,473.16
Cohoes Co's. dam to mouth of Mohawk river.....	12.68			c 3,485.84

c As the result of a joint determination of drainage areas of Schoharie creek, based on independent computations by the engineers of the Board of Water Supply of the City of New York and of the Department of State Engineer, these figures should be increased by about 21 square miles.

## Drainage areas of SCHOHARIE CREEK \*

(From U. S. G. S. topographic maps)

LOCATION	DISTANCE IN MILES †			Elevation	FALL IN FEET		DRAINAGE AREA IN SQUARE MILES	
	From mouth	From Prattsville	Place to place		Place to place	Per mile	Point to point	Total
Reservoir site.....	64.0	0.0	.....	1,240	.....	.....	1228.0	228.0
Prattsville gage.....	62.5	1.5	1.5	1,160	80	53.3	10.4	*238.4
Devasego Falls.....	60.5	3.5	2.0	1,100	60	30.0	8.1	240.5
Gilboa.....	55.6	8.5	5.0	1,000	100	20.0	58.5	395.0
North Blenheim.....	48.5	15.5	7.0	800	200	22.3	92.9	397.9
Breakabeen.....	43.0	21.0	5.5	710	90	16.4	23.8	421.7
Middleburg.....	35.0	29.0	8.0	620	90	11.2	105.7	*527.4
Schoharie.....	29.5	34.5	5.5	590	30	5.5	26.6	554.0
Mouth of Fox creek.....	28.0	36.0	1.5	585	5	3.3	90.5	644.5
Above Cobleskill creek.....	24.0	40.0	4.0	580	5	1.2	12.8	657.3
Mouth of Cobleskill creek.....	24.0	46.0	0.0	580	0	.....	135.9	793.2
Esperance.....	18.0	46.0	6.0	560	20	3.8	63.2	856.4
Burtonville.....	14.5	49.5	3.5	520	40	11.4	14.0	870.4
Mill Point bridge.....	6.0	58.0	8.5	340	180	21.1	30.3	900.7
Mouth (Ft. Hunter).....	0.0	64.0	6.0	280	60	7.5	8.6	*909.3

\* The table of drainage areas of Schoharie creek is being revised as the result of a joint determination of areas, based on independent computations by the engineers of the Board of Water Supply of the City of New York and of the Department of State Engineer, and will be published as soon as available. Revised figures for certain of the points above are, in square miles: Prattsville gage, 236.1; Middleburg, 531.6; Fort Hunter above feeder dam, 929.9.

† Measured along general course of stream.

‡ From head.

## Drainage areas of EAST CANADA CREEK

(From U. S. G. S. topographic maps)

DIVISIONS OF AREA	AREA IN SQUARE MILES			
	Place to place	Sub-total	Branch total	Total
<b>EAST CANADA CREEK</b>				
Above Oregon.....	40.13	.....	.....	40.13
Oregon to junction with North creek.....	10.42	.....	.....	50.55
<b>North Creek</b>				
Source to junction with East Canada creek.....	18.60	.....	18.60	69.15
<b>EAST CANADA CREEK</b>				
Junction with North creek to junction with Trammel creek.....	8.63	.....	.....	77.78
<b>Trammel Creek</b>				
Source to junction with East Canada creek.....	12.04	.....	.....	89.82
<b>EAST CANADA CREEK</b>				
Junction with Trammel creek to junction with Ayers creek (Stratford).....	0.20	.....	.....	90.02
<b>Ayers Creek</b>				
Source to junction with East Canada creek.....	13.63	.....	.....	103.65
<b>EAST CANADA CREEK</b>				
Junction with Ayers creek (Stratford) to Emmonsburg.....	8.05	.....	.....	111.70
Emmonsburg to junction with Big Sprite creek.....	15.68	.....	.....	127.38
<b>Big Sprite Creek</b>				
Source to Stewart landing.....	40.90	.....	.....	.....
Stewart landing to junction with East Canada creek.....	7.87	.....	49.77	176.15
<b>EAST CANADA CREEK</b>				
Junction with Big Sprite creek to junction with Middle Sprite creek.....	3.70	.....	.....	179.85
<b>Middle Sprite Creek</b>				
Source to junction with East Canada creek.....	22.65	.....	.....	202.50
<b>EAST CANADA CREEK</b>				
Junction with Middle Sprite creek to junction with Spruce creek.....	0.20	.....	.....	202.70
<b>Spruce Creek</b>				
Source to dam at Diamond Hill.....	36.20	36.20	.....	.....
Dam at Diamond Hill to Salisbury.....	13.08	49.28	.....	.....
Salisbury to junction with East Canada creek.....	1.20	.....	50.48	a 252.98
<b>EAST CANADA CREEK</b>				
Junction with Spruce creek to lower bridge, Dolgeville.....	0.60	.....	.....	253.48
Lower bridge, Dolgeville, to High falls.....	3.64	.....	.....	257.22
High falls to junction with Gillett creek.....	0.84	.....	.....	258.06
<b>Gillett Creek</b>				
Source to junction with East Canada creek.....	10.92	.....	.....	268.98
<b>EAST CANADA CREEK</b>				
Junction with Gillett creek to Ingham Mills.....	8.73	.....	.....	277.71
Ingham Mills to Beardslee Falls.....	3.60	.....	.....	281.31
Beardslee Falls to mouth.....	0.30	.....	.....	a 281.61

a 0.2 small, due to error in addition.

## Drainage areas of WEST CANADA CREEK \*

(From U. S. G. S. topographic maps)

DIVISIONS OF AREA	AREA IN SQUARE MILES			
	Place to place	Sub-total	Branch total	Total
<b>WEST CANADA CREEK</b>				
Source to outlet of Mud lake .....	18.05	.....	.....	18.05
Outlet of Mud lake to Swanson dam .....	28.77	.....	.....	46.82
Swanson dam to Honnedaga brook .....	46.82	.....	.....	a 93.64
<b>Honnedaga Brook</b>				
Honnedaga lake above outlet .....	5.40	.....	.....	.....
Lake to mouth .....	11.90	.....	17.30	110.94
<b>WEST CANADA CREEK</b>				
Honnedaga brook to South branch .....	30.46	.....	.....	141.40
<b>South Branch, West Canada Creek</b>				
Source to Mountain House .....	34.40	.....	.....	.....
Mountain House to mouth .....	19.25	.....	53.65	195.05
<b>WEST CANADA CREEK</b>				
South branch to Four-Mile brook (Wilmurt bridge) .....	2.58	.....	.....	197.63
<b>Four-Mile Brook</b>				
Source to mouth .....	.....	.....	26.17	223.80
<b>WEST CANADA CREEK</b>				
Four-Mile brook to Black creek .....	36.02	.....	.....	260.72
<b>Black Creek</b>				
Source through Hall Vly. ....	8.40	.....	.....	.....
Hall Vly to Bennett's mill (first bridge above Gray) .....	16.30	.....	24.70	.....
Bennett's mill to Gray .....	4.50	.....	29.20	.....
Gray to North branch (first bridge below Gray) ..	3.00	.....	32.20	.....
<b>North Branch, Black Creek</b>				
Source to Bull Hill road (contour 1,520) .....	6.80	.....	.....	.....
Bull Hill road to Mill creek .....	4.00	10.80	.....	.....
<b>Mill creek:</b>				
Source through Cranberry lake and swamp .....	11.00	.....	.....	.....
Foot of Cranberry swamp to mouth .....	6.20	17.20	.....	.....
Total, North branch, Black creek, to Mill creek, inclusive .....	.....	28.00	.....	.....
<b>North Branch, Black Creek</b>				
Mill creek to mouth .....	0.85	b 28.85	61.05	.....
<b>Black Creek</b>				
North branch to Mounts creek .....	0.17	.....	61.22	.....
<b>Mounts Creek</b>				
Source to Gray-Wilmurt road (Radley) .....	13.25	.....	.....	.....
Gray-Wilmurt road to mouth .....	2.10	15.35	76.57	.....
<b>Black Creek</b>				
Mounts creek to second bridge below Gray .....	1.55	.....	78.12	.....
Second bridge to third bridge below Gray .....	5.65	.....	83.77	.....
Third bridge to fourth bridge below Gray .....	12.35	.....	96.12	.....
Fourth bridge to Parleville bridge c .....	4.00	.....	100.12	.....
Parleville bridge to Grant c .....	1.95	.....	102.07	.....
Grant to West Canada creek c .....	1.15	.....	103.22	363.94
<b>WEST CANADA CREEK</b>				
Black creek to Twin Rock bridge c .....	0.50	.....	.....	364.44
Twin Rock bridge to Hinekley dam c .....	8.50	.....	.....	372.94
Hinekley dam to Prospect .....	2.00	.....	.....	374.94
Prospect to Trenton Falls .....	0.90	.....	.....	375.84
Trenton Falls to Steuben creek .....	6.20	.....	.....	382.04

\* This is a rearrangement of table previously published, the quantities remaining unchanged except for the correction of typographical errors as noted.

a Erroneously printed 93.04. b Erroneously printed 20.85. c Creek drowned out by reservoir

Drainage areas of WEST CANADA CREEK \* — Continued  
(From U. S. G. S. topographic maps)

DIVISIONS OF AREA	AREA IN SQUARE MILES			
	Place to place	Sub-total	Branch total	Total
<i>Steuben Creek</i>				
Source to mouth.....	.....	.....	52.30	434.34
<b>WEST CANADA CREEK</b>				
Steuben creek to Poland (first bridge below).....	35.80	.....	.....	470.14
Poland to Newport.....	10.00	.....	.....	480.14
Newport to Middleville.....	47.20	.....	.....	527.34
Middleville to Kast bridge.....	47.50	.....	.....	574.84
Kast bridge to mouth.....	8.80	.....	.....	583.64

### DELTA RESERVOIR

This station, established April, 1913, is located at the dam of the Delta reservoir on the Mohawk river. The gage is a concrete staff on the substructure of the gate-house. This station indicates the surface of the Delta reservoir constructed in connection with the Barge canal work to supply the Rome summit level. It is read twice daily — at 9 A. M. and 4 P. M. — to tenths. The dam is a concrete structure with an ogee crest 300 feet long at elevation 550.0. There are four 60-inch pipes to pass water downstream and a 30-inch pipe line to supply water to the Black River canal. The reservoir at crest level has an area of about  $4\frac{1}{2}$  square miles and a capacity of 2,750,000,000 cubic feet.

Daily elevation of water-surface (B. C. Datum) of DELTA RESERVOIR AT DELTA DAM for the nine months ending June 30, 1916. William Masner, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	543.5	547.2	547.3	540.3	529.9	492.1	527.9	547.9	548.35
2.....	543.6	547.1	547.2	539.45	529.4	491.95	532.5	547.9	548.05
3.....	543.9	547.0	547.0	539.6	527.9	491.7	534.7	547.9	548.1
4.....	543.9	547.0	546.85	539.0	526.2	491.6	536.15	548.1	548.4
5.....	544.95	547.0	546.65	538.25	524.3	491.6	536.8	548.2	548.4
6.....	546.3	547.0	546.4	538.4	522.5	491.5	537.9	548.15	548.25
7.....	546.3	547.0	546.3	538.7	520.6	491.4	538.85	548.1	548.05
8.....	546.4	546.9	546.15	538.1	518.3	491.2	539.25	548.05	547.9
9.....	546.4	546.9	545.85	537.5	516.15	491.0	539.4	548.0	547.85
10.....	546.4	546.8	545.6	536.95	513.05	490.5	539.85	548.0	547.7
11.....	546.3	546.7	545.55	536.4	507.7	490.5	540.3	547.9	547.55
12.....	546.3	546.6	545.4	536.2	497.25	491.0	541.4	547.8	547.35
13.....	546.15	546.5	545.0	536.25	491.7	492.55	542.1	547.7	547.1
14.....	546.1	546.3	544.95	537.15	491.2	495.6	542.7	547.6	547.05
15.....	546.3	546.3	544.0	537.15	491.1	496.85	543.3	547.5	546.85



Daily elevation of water-surface (B. C. Datum) of DELTA RESERVOIR AT DELTA DAM for the nine months ending June 30, 1916 — *Continued*

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
16.....	546.3	546.3	544.2	537.35	491.3	497.45	543.95	547.5	547.2
17.....	546.3	546.6	543.8	535.5	491.4	498.1	544.45	548.65	547.95
18.....	546.3	546.5	543.5	534.25	491.55	498.55	544.95	550.35	548.0
19.....	546.8	546.5	543.45	533.0	491.5	498.7	545.4	550.4	548.25
20.....	547.45	547.35	543.15	531.45	491.15	499.05	545.55	550.3	548.65
21.....	547.4	547.7	542.85	529.55	490.95	499.15	545.75	550.05	548.7
22.....	547.5	547.8	542.5	528.1	490.9	499.45	546.15	549.9	548.6
23.....	547.4	547.9	542.0	530.0	490.9	499.6	546.95	550.05	548.45
24.....	547.4	547.65	541.6	529.65	491.0	499.45	547.25	550.2	548.25
25.....	547.4	547.35	541.25	528.65	492.0	499.45	547.45	550.05	548.05
26.....	547.3	547.05	542.2	527.8	498.55	501.45	547.6	549.85	547.8
27.....	547.3	546.9	542.45	528.2	495.5	502.35	547.75	549.65	547.6
28.....	547.25	547.0	542.45	530.85	493.15	507.0	547.9	549.45	547.5
29.....	547.15	547.1	542.1	531.55	492.4	514.05	547.45	549.1	547.35
30.....	547.1	547.25	541.7	530.45	.....	519.2	547.9	548.85	547.05
31.....	547.2	.....	541.05	529.35	.....	524.15	.....	548.65	.....

#### MOHAWK RIVER ABOVE DAM, RIDGE MILLS

This station, established May 3, 1904, is located above the dam across the Mohawk river at Ridge Mills, about  $2\frac{1}{4}$  miles upstream from Rome. The gage is a staff attached to the timber abutment of the dam on the left bank and is about 20 feet above the crest. The gage is read once daily — at about 7 A. M. — to tenths.

Daily elevation of water-surface (B. C. Datum) of MOHAWK RIVER ABOVE DAM AT RIDGE MILLS, for the nine months ending June 30, 1916. Daniel Brown, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	466.2	466.3	466.4	467.1	467.4	466.3	466.2	466.1	466.5
2.....	466.2	466.3	466.4	467.2	467.4	466.1	466.2	466.1	466.5
3.....	466.2	466.3	466.4	467.2	467.4	466.1	466.2	466.1	466.6
4.....	466.2	466.3	466.4	467.2	467.4	466.0	466.2	466.2	466.5
5.....	466.6	466.3	466.4	467.1	467.4	466.0	466.2	466.1	466.5
6.....	466.3	466.3	466.4	467.2	467.3	466.0	466.2	466.1	466.5
7.....	466.3	466.3	466.4	467.2	467.3	466.0	466.2	466.1	466.5
8.....	466.3	466.3	466.4	467.1	467.2	466.0	466.2	466.1	466.5
9.....	466.3	466.3	466.2	466.9	467.2	466.0	466.2	466.1	466.5
10.....	466.3	466.3	466.1	466.9	467.5	466.0	466.2	466.1	466.5
11.....	466.2	466.3	466.1	466.9	467.5	466.0	466.2	466.1	466.5
12.....	466.2	466.3	466.1	466.4	467.1	466.0	466.2	466.1	466.5
13.....	466.2	466.3	466.4	466.4	466.1	465.7	466.2	466.1	466.5
14.....	466.2	466.3	466.5	466.7	465.9	465.7	466.2	466.1	466.5
15.....	466.3	466.5	466.7	466.8	466.1	465.7	466.2	466.1	466.5
16.....	466.3	466.5	466.7	467.2	466.0	465.8	466.2	466.1	466.6
17.....	466.3	466.6	466.7	467.2	466.0	465.9	466.2	466.1	466.5
18.....	466.3	466.6	466.7	467.2	466.0	465.9	466.2	466.1	466.5
19.....	466.4	466.6	466.7	467.2	466.0	465.8	466.1	466.7	466.5
20.....	466.3	466.5	466.7	467.2	466.0	465.8	466.1	466.0	466.5

Daily elevation of water-surface (B. C. Datum) of MOHAWK RIVER ABOVE DAM  
AT RIDGE MILLS, for the nine months ending June 30, 1916 — *Continued*

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
21.....	466.3	466.5	466.7	467.4	466.0	465.8	466.1	466.5	466.5
22.....	466.3	466.5	466.7	467.4	466.0	465.8	466.1	466.5	466.5
23.....	466.3	466.5	466.7	467.5	466.0	465.8	466.2	466.6	466.5
24.....	466.3	466.9	466.7	467.4	466.0	465.8	466.2	466.6	466.5
25.....	466.3	466.9	466.8	467.4	466.1	465.9	466.1	466.5	466.5
26.....	466.3	466.9	466.8	467.4	467.1	a	466.1	466.5	466.5
27.....	466.3	466.9	466.7	467.4	466.9	a	466.1	466.5	466.5
28.....	466.3	466.9	466.7	467.4	466.3	a	466.0	466.5	466.5
29.....	466.3	466.5	466.9	467.4	466.3	a	466.1	466.5	466.5
30.....	466.1	466.5	466.9	467.5	.....	a	466.1	466.5	466.5
31.....	466.1	.....	466.9	467.5	.....	a	.....	466.5	.....

a No record; gage out.

### MOHAWK RIVER BELOW DAM, RIDGE MILLS

This station, established May 3, 1904, is located below the dam across the Mohawk river at Ridge Mills, about  $2\frac{1}{4}$  miles above Rome. The gage is a staff located on the lower end of the timber cribbing below the dam and is read once daily — at about 7 A. M.— to tenths.

Daily elevation of water-surface (B. C. Datum) of MOHAWK RIVER BELOW DAM AT  
RIDGE MILLS, for the nine months ending June 30, 1916. Daniel Brown, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	459.6	459.6	459.7	460.6	460.9	459.6	459.5	459.4	459.9
2.....	459.6	459.6	459.7	460.7	460.9	459.4	459.5	459.4	459.9
3.....	459.6	459.6	459.7	460.7	460.9	459.4	459.5	459.4	459.9
4.....	459.6	459.6	459.7	460.7	460.9	459.2	459.5	459.5	459.9
5.....	459.9	459.6	459.7	460.6	460.8	459.2	459.5	459.4	459.9
6.....	459.6	459.6	459.7	460.7	460.7	459.2	459.5	459.4	459.9
7.....	459.6	459.6	459.7	460.7	460.7	459.3	459.5	459.4	459.9
8.....	459.6	459.6	459.7	460.7	460.7	459.3	459.5	459.4	459.9
9.....	459.6	459.6	459.6	460.6	460.7	459.3	459.5	459.4	459.9
10.....	459.6	459.6	459.3	460.2	460.8	459.3	459.5	459.4	459.9
11.....	459.5	459.6	459.3	460.2	460.8	459.3	459.5	459.4	459.9
12.....	459.5	459.6	459.3	459.7	460.6	459.3	459.5	459.4	459.9
13.....	459.5	459.6	459.7	459.7	459.4	458.9	459.5	459.4	459.9
14.....	459.5	459.6	459.7	460.0	459.4	458.9	459.5	459.4	459.9
15.....	459.6	459.8	460.1	460.1	459.4	458.9	459.5	459.4	459.9
16.....	459.6	459.8	460.1	460.6	459.4	459.0	459.5	459.4	460.0
17.....	459.6	459.8	460.1	460.6	459.4	459.1	459.5	459.7	459.9
18.....	459.6	459.8	460.1	460.6	459.4	459.1	459.5	459.9	459.9
19.....	459.7	459.8	460.1	460.6	459.3	459.1	459.4	460.1	459.9
20.....	459.6	459.8	460.1	460.6	459.3	459.1	459.4	460.0	459.9
21.....	459.6	459.8	460.1	461.0	459.5	459.1	459.4	459.8	459.9
22.....	459.6	459.8	460.1	461.0	459.5	459.1	459.4	459.8	459.9
23.....	459.6	459.8	460.1	461.0	459.5	459.1	459.5	460.0	459.9
24.....	459.6	460.1	460.1	461.0	459.5	459.1	459.5	459.9	459.9
25.....	459.6	460.1	460.1	461.0	459.6	459.1	459.4	459.9	459.9

Daily elevation of water-surface (B. C. Datum) of MOHAWK RIVER BELOW DAM  
AT RIDGE MILLS, for the nine months ending June 30, 1916 — *Continued*

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
26. ....	459.6	460.2	460.1	461.0	460.6	459.1	459.4	459.9	459.9
27. ....	459.6	460.2	460.1	461.0	460.2	459.1	459.4	459.9	459.9
28. ....	459.6	460.2	460.1	461.0	459.8	459.1	459.3	459.9	459.9
29. ....	459.6	459.7	460.3	461.0	459.8	459.4	459.4	459.9	459.9
30. ....	459.3	459.7	460.3	460.8	.....	459.4	459.4	459.9	459.9
31. ....	459.3	.....	460.3	460.8	.....	459.5	.....	459.9	.....

### MOHAWK RIVER ABOVE STATE DAM, ROME

This station, established May 3, 1904, is located about 100 feet above the old State dam at Rome. The gage, a staff secured to an elm tree at the head of the Erie canal feeder, gives the elevation of water-surface above the dam. It is read once daily — at 8 A. M. — to tenths, the hundredths in the table being due to the datum of the gage.

Daily elevation of water-surface (B. C. Datum) of MOHAWK RIVER ABOVE STATE  
DAM AT ROME, for the nine months ending June 30, 1916. John Phillips, Ob-  
server

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1. ....	432.03	432.03	432.33	432.73	433.43	432.13	432.33	432.23	432.23
2. ....	432.03	431.93	432.33	432.73	433.43	432.13	432.13	432.23	432.13
3. ....	431.83	431.93	432.23	432.83	433.33	431.93	432.13	432.13	432.33
4. ....	431.93	431.93	432.23	432.83	433.23	431.83	432.13	431.73	432.33
5. ....	431.93	432.03	432.33	432.73	433.23	431.73	432.03	431.73	432.33
6. ....	431.93	432.03	432.33	432.83	433.33	431.73	432.03	431.73	432.33
7. ....	431.83	432.03	432.33	432.93	433.33	431.73	432.13	431.83	432.23
8. ....	431.83	431.93	432.33	433.03	433.33	431.73	432.03	431.83	432.33
9. ....	431.83	431.93	432.13	433.03	433.33	431.73	432.23	431.83	432.33
10. ....	431.93	431.93	432.13	432.93	433.23	431.73	432.13	431.83	432.33
11. ....	431.93	431.93	432.13	432.73	433.23	431.63	432.13	431.93	432.23
12. ....	431.83	432.03	431.93	432.33	433.23	431.63	432.13	431.93	432.13
13. ....	431.83	432.03	431.93	432.13	432.33	431.73	432.13	431.83	432.13
14. ....	431.93	432.03	432.03	432.53	432.23	431.63	432.23	431.83	432.13
15. ....	432.13	432.13	431.93	432.73	432.13	431.63	432.23	431.93	432.13
16. ....	432.13	432.13	432.03	432.73	432.13	431.63	432.03	432.23	432.23
17. ....	431.83	432.13	432.03	432.73	432.13	431.73	432.13	432.53	432.33
18. ....	431.83	432.03	432.13	432.83	432.03	431.63	432.13	432.63	432.33
19. ....	432.03	432.03	432.33	432.93	432.13	431.63	432.23	432.43	432.33
20. ....	432.03	432.03	432.33	432.93	432.13	431.63	432.23	432.33	432.23
21. ....	432.03	432.03	432.33	433.23	432.13	431.73	432.23	432.33	432.33
22. ....	432.03	432.03	432.33	433.23	432.13	431.63	432.53	432.43	432.33
23. ....	432.13	432.03	432.43	433.33	432.03	431.73	432.23	432.53	432.23
24. ....	432.03	432.13	432.43	433.33	432.03	431.73	432.23	432.33	432.23
25. ....	432.03	432.23	432.43	433.23	432.13	431.63	432.23	432.13	432.23
26. ....	432.13	432.23	432.33	433.33	432.43	431.63	432.33	432.13	432.33
27. ....	432.03	432.23	432.33	433.23	432.43	431.73	432.33	432.13	432.33
28. ....	431.93	432.33	432.43	433.43	432.23	431.83	432.23	432.03	432.23
29. ....	431.93	432.23	432.43	433.43	432.13	431.93	432.23	432.03	432.23
30. ....	431.93	432.23	432.43	433.33	.....	432.03	432.23	432.13	432.23
31. ....	432.03	.....	432.53	433.33	.....	432.13	.....	432.23	.....

## MOHAWK RIVER BELOW STATE DAM, ROME

This station, established May 3, 1904, is located at the old State dam at Rome. The gage, formerly a chain gage, now consists of a staff secured to the right-hand abutment of the dam below the crest. It is read once daily—at 8 A. M.—to tenths, the hundredths in the table being due to the datum of the gage.

Daily elevation of water-surface (B. C. Datum) of MOHAWK RIVER BELOW STATE DAM AT ROME, for the nine months ending June 30, 1916. John Phillips, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1	427.16	427.76	428.26	428.46	429.46	427.96	427.86	427.86	427.76
2	427.26	427.66	428.26	428.46	429.46	427.86	427.86	427.86	427.66
3	427.16	427.66	428.16	428.56	429.36	427.66	427.86	427.76	427.86
4	427.26	427.66	428.16	428.56	429.26	427.46	427.86	427.46	427.86
5	427.26	427.76	428.26	428.46	429.26	427.56	427.76	427.46	427.86
6	427.26	427.76	428.26	428.56	429.26	427.46	427.76	427.46	427.86
7	427.16	427.76	428.16	428.76	429.26	427.56	427.86	427.36	427.76
8	427.16	427.66	428.26	428.86	429.26	427.56	427.76	427.26	427.86
9	427.16	427.66	428.06	428.86	429.26	427.46	427.96	427.26	427.86
10	427.26	427.66	427.76	428.86	429.16	427.36	427.86	427.26	427.86
11	427.26	427.66	427.46	428.56	429.16	427.36	427.86	427.36	427.76
12	427.16	427.76	427.46	428.26	429.06	427.36	427.86	427.36	427.66
13	427.16	427.76	427.66	428.06	428.16	427.36	427.86	427.26	427.66
14	427.36	427.76	427.66	428.46	428.06	427.36	427.96	427.26	427.66
15	427.66	427.86	427.76	428.66	427.96	427.26	427.96	427.36	427.76
16	427.66	427.86	427.86	428.66	427.86	427.26	427.66	427.66	427.76
17	427.46	427.86	427.86	428.66	427.86	427.36	427.76	428.06	427.86
18	427.46	427.76	427.86	428.76	427.76	427.36	427.76	428.26	427.86
19	427.66	427.96	428.86	428.86	427.86	427.36	427.76	428.06	427.86
20	427.66	427.96	428.16	428.86	427.86	427.36	427.76	427.86	427.76
21	427.66	428.26	428.16	429.16	427.86	427.46	427.86	427.86	427.86
22	427.76	428.26	428.16	429.16	427.86	427.36	428.16	427.96	427.76
23	427.76	428.26	428.16	429.26	427.76	427.46	427.86	428.06	427.76
24	427.76	428.16	428.16	429.26	427.76	427.46	427.86	427.86	427.76
25	427.76	428.26	428.16	429.26	427.86	427.46	427.86	427.86	427.76
26	427.86	428.26	428.06	429.16	428.26	427.36	427.86	427.56	427.86
27	427.76	428.26	428.06	429.26	428.26	427.36	427.86	427.56	427.86
28	427.66	428.26	428.16	429.46	428.06	427.46	427.96	427.56	427.76
29	427.66	428.26	428.26	429.46	427.96	427.56	427.96	427.56	427.76
30	427.66	428.16	428.26	429.36	.....	427.76	427.96	427.66	427.76
31	427.76	.....	428.36	429.36	.....	427.86	.....	427.76	.....

## MOHAWK RIVER AT UTICA

This station, established March 15, 1905, is located at the Genesee street bridge over the Mohawk river in the city of Utica. This bridge is about 3,600 feet below the new terminal lock and about 3,000 feet above the new terminal dam. This dam consists of an ogee crest 100 feet long at Elev. 397.0 and 3 Taintor gates each of 30 feet span with sills at Elev. 392.0. Its function will be to maintain a low navigable surface of Elev. 397.0 in the Utica canal terminal.

The gage, formerly a staff secured to timber-work of right-hand abutment, was replaced by a chain gage on the downstream side of the bridge from May 8, 1913, to September 23, 1915. The present gage is a staff temporarily secured to a pile just above the temporary bridge. It is read twice daily — at 8:00 A. M. and 5:00 P. M. — to tenths.

Daily elevation of water-surface (B. C. Datum) of MOHAWK RIVER AT GENESSEE STREET BRIDGE, UTICA, for the nine months ending June 30, 1916. W. E. Young, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	397.55	394.4	394.4	396.15	399.85	396.8	403.05	395.1	394.4
2.....	397.65	394.3	394.4	396.9	398.9	396.8	403.55	395.0	394.3
3.....	397.95	394.9	394.3	397.7	398.6	396.8	402.45	395.15	394.5
4.....	397.3	395.35	394.3	398.1	397.95	396.75	400.35	396.8	394.7
5.....	397.85	395.8	394.1	397.6	397.15	396.7	396.4	398.9	394.9
6.....	399.65	398.05	394.15	397.0	396.65	396.4	397.05	398.25	394.9
7.....	399.45	395.35	394.2	396.55	396.6	396.0	396.5	398.0	394.8
8.....	a g	395.0	394.1	396.4	396.6	395.85	396.95	397.75	394.8
9.....	a g	394.8	394.05	396.3	396.5	395.5	395.3	397.1	394.85
10.....	a g	394.75	393.9	396.3	396.5	395.3	395.1	396.7	394.9
11.....	a g	394.6	393.9	396.9	396.5	394.85	395.0	396.5	394.9
12.....	a g	394.45	393.9	396.8	396.4	394.85	395.0	395.95	394.9
13.....	a g	394.25	393.85	397.05	395.9	394.05	395.1	395.5	394.95
14.....	a g	394.2	393.8	396.7	394.95	394.15	395.25	395.0	395.15
15.....	395.6	394.6	393.7	396.1	394.55	394.3	395.4	394.85	395.3
16.....	395.1	395.5	393.75	395.85	393.95	394.35	395.3	396.55	395.5
17.....	394.7	395.85	394.2	395.9	393.85	394.15	395.2	395.3	395.15
18.....	394.5	396.2	395.85	396.1	393.85	394.0	395.4	400.2	394.8
19.....	395.95	396.35	397.35	396.25	394.0	394.0	395.85	398.85	394.7
20.....	397.35	396.55	397.7	396.3	393.95	393.9	396.0	397.45	394.8
21.....	396.7	396.75	397.35	397.1	393.9	393.9	396.25	396.75	394.75
22.....	396.0	396.25	396.8	399.1	393.85	393.9	396.35	396.25	394.7
23.....	395.35	395.7	396.05	401.1	393.8	394.0	397.4	396.15	394.6
24.....	394.3	395.15	395.85	400.15	393.85	394.05	397.1	396.0	394.5
25.....	393.85	394.95	396.85	399.6	395.2	394.15	396.9	395.7	394.55
26.....	393.85	394.8	398.7	399.25	397.5	394.25	396.45	395.25	394.6
27.....	391.65	394.6	399.35	399.6	397.5	395.75	396.0	394.9	394.5
28.....	395.05	394.5	398.6	399.5	397.15	397.95	395.8	394.75	394.5
29.....	395.05	394.5	397.6	399.15	396.85	400.2	395.5	394.65	394.4
30.....	394.9	394.4	397.0	398.9	.....	402.25	395.15	394.55	394.4
31.....	394.7	.....	396.5	398.0	.....	403.45	.....	394.45	.....

a No record. g Water below lower limit of gage, Elev. 3,950. New gage placed October 15, 1915.

## MOHAWK RIVER AT FRANKFORT

This station was established January 25, 1913, at the highway bridge over the Mohawk river on the Dyke road between Frankfort and North Frankfort about 10 miles east of Utica. The gage is a standard chain on the downstream side of the new steel bridge. It is read twice daily—at 8 A. M. and 4 P. M.—to tenths. The water-surface indicated is that of the river about 1,600 feet below the new retention dam and about 200 feet below the end of the land-line running east from Barge canal lock No. 19 at Sterling creek.

Daily elevation of water-surface (B. C. Datum) of MOHAWK RIVER AT FRANKFORT for the nine months ending June 30, 1916. C. F. Loring, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	393.5	381.85	382.3	381.5	384.55	383.75	389.5	380.7	380.0
2.....	383.8	381.8	382.1	382.15	384.4	383.05	390.0	380.85	379.85
3.....	384.3	381.9	382.15	384.75	383.5	382.5	388.55	380.7	379.9
4.....	384.05	381.65	381.85	384.9	382.8	382.25	386.75	381.0	381.1
5.....	384.15	381.5	381.5	386.5	382.5	381.85	385.15	381.1	380.9
6.....	384.45	381.45	381.25	386.4	382.2	381.45	384.2	380.6	380.55
7.....	383.9	381.25	382.3	386.05	381.95	381.35	383.5	379.8	380.25
8.....	383.7	381.15	382.7	385.6	382.1	381.55	383.1	379.85	380.0
9.....	383.7	381.2	382.7	384.9	382.75	382.75	382.8	379.95	380.2
10.....	383.6	381.3	382.0	383.45	382.7	381.8	382.2	379.9	380.25
11.....	383.7	381.25	381.3	381.95	382.95	381.75	382.25	379.95	379.95
12.....	383.75	381.05	380.05	381.6	383.45	381.7	383.5	380.0	380.0
13.....	383.1	381.4	379.55	380.9	383.65	381.75	383.75	380.0	379.95
14.....	381.7	382.5	382.2	381.75	382.25	381.55	383.25	380.0	380.4
15.....	383.0	383.95	382.9	382.45	381.95	381.2	383.65	379.85	380.15
16.....	383.15	383.9	382.9	382.85	381.75	380.8	383.0	379.95	380.1
17.....	382.05	381.95	381.85	382.9	381.3	381.0	382.25	382.75	381.65
18.....	381.9	381.85	381.85	382.55	381.1	380.95	382.8	385.55	380.85
19.....	382.1	382.5	383.55	383.15	381.05	381.0	381.75	384.65	380.55
20.....	383.95	383.9	383.3	383.3	381.0	381.25	381.4	383.55	380.9
21.....	382.05	383.4	382.75	383.9	380.9	381.05	381.15	381.6	380.75
22.....	382.95	382.7	381.75	387.05	381.6	380.9	381.3	380.55	380.35
23.....	382.05	381.35	381.4	386.4	381.9	381.05	383.0	382.4	379.85
24.....	383.4	380.95	381.25	387.75	381.1	381.35	382.45	382.65	379.8
25.....	383.4	381.2	381.5	386.7	380.9	381.2	382.05	381.55	381.25
26.....	383.4	380.95	384.15	385.05	382.95	380.55	382.15	380.9	383.85
27.....	383.15	380.9	384.35	385.9	384.05	381.0	381.35	380.15	383.45
28.....	383.4	380.85	383.15	387.15	384.4	383.65	380.95	379.95	384.35
29.....	383.3	381.9	382.45	386.4	383.9	386.15	380.55	379.9	382.45
30.....	382.05	381.8	382.15	385.85	.....	387.1	380.45	379.9	381.2
31.....	381.9	.....	381.45	386.4	.....	388.7	.....	380.05	.....

## MOHAWK RIVER AT ILION

This station, established January 24, 1913, is located at the highway bridge over the Mohawk river opposite the village of Ilion and about two miles above Barge canal dam No. 14 at Herkimer. A standard chain gage, attached to the downstream truss near the center of the new bridge, is read to tenths twice daily—between 7 and 8 in the morning and 4 and 6 in the afternoon.

Daily elevation of water-surface (B. C. Datum) of MOHAWK RIVER AT ILION, for the nine months ending June 30, 1916. P. C. Earl, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	383.9	381.5	381.7	382.4	384.9	382.5	388.9	380.4	a
2.....	384.0	381.25	381.95	383.1	384.35	381.85	389.4	380.4	a
3.....	384.1	381.05	381.9	384.8	383.2	381.55	388.2	380.2	380.05
4.....	384.1	380.9	381.9	384.8	382.4	381.7	386.55	380.65	380.6
5.....	383.95	381.4	382.1	383.05	382.15	381.45	385.8	380.55	380.65
6.....	384.0	380.85	381.85	386.05	382.2	381.65	384.15	379.6	380.6
7.....	384.0	380.75	382.35	385.3	382.3	381.75	383.6	379.6	380.2
8.....	384.0	380.65	382.55	384.1	381.95	381.55	383.15	380.0	379.7
9.....	383.8	381.0	382.5	382.95	382.0	381.45	382.3	379.5	380.15
10.....	383.9	381.0	382.25	383.15	382.05	381.55	382.3	379.5	379.9
11.....	383.2	380.75	381.35	382.6	382.05	381.35	382.25	379.55	379.55
12.....	382.0	380.9	381.35	381.75	382.25	381.45	382.8	379.45	380.1
13.....	382.0	381.25	381.7	381.35	381.95	381.65	383.05	379.3	380.0
14.....	381.75	381.85	382.7	382.3	380.55	381.2	382.95	379.75	380.25
15.....	382.1	383.9	382.9	382.65	380.2	380.65	382.95	380.15	379.95
16.....	382.9	383.55	383.2	383.4	380.25	380.6	382.75	379.85	380.35
17.....	381.75	381.75	381.95	382.85	380.4	380.75	382.25	379.85	380.7
18.....	381.45	380.7	382.15	382.65	380.65	381.4	382.15	380.05	380.75
19.....	381.85	381.5	382.65	382.65	380.55	381.6	381.65	379.8	380.4
20.....	383.75	383.6	382.75	382.45	380.7	381.45	381.25	379.95	380.4
21.....	381.95	383.2	382.35	382.6	380.85	381.1	381.0	380.2	380.55
22.....	382.05	382.75	381.4	385.5	381.15	380.65	381.35	380.15	381.1
23.....	382.15	381.25	381.05	387.35	381.1	380.55	382.5	380.0	380.3
24.....	382.35	380.9	381.0	386.65	380.95	380.0	382.35	380.15	379.95
25.....	382.95	380.95	381.65	385.85	381.8	380.7	381.8	380.35	380.6
26.....	382.7	380.75	382.8	385.95	382.3	380.6	381.4	380.15	383.9
27.....	383.3	380.7	384.15	385.8	383.45	381.3	381.1	379.5	383.65
28.....	382.9	380.8	382.65	386.2	383.0	383.8	380.8	380.05	383.9
29.....	382.55	380.6	382.0	385.7	382.7	385.95	380.65	379.9	382.4
30.....	382.2	381.2	381.85	385.55	.....	386.7	380.5	a	381.25
31.....	381.8	.....	381.75	385.1	.....	387.2	.....	a	.....

a No record; gage removed during repairs to bridge.

## MOHAWK RIVER AT MOHAWK STREET, HERKIMER

This station, established November 23, 1904, is located at the Utica and Mohawk Valley electric railway bridge over the Mohawk river at Mohawk street, connecting the villages of Herkimer and Mohawk. A standard chain gage is located on the upstream wing of the north or left-hand abutment of the bridge. This gage is about 70 feet above dam No. 14, which is of a movable type with a fixed sill at Elev. 374.0. The gage also indicates closely the water-surface above the canal guard-gate at this locality. Readings are taken twice daily—between 6:30 and 7:30 A. M. and 4:30 and 6:30 P. M.—to tenths.

Daily elevation of water-surface (B. C. Datum) of MOHAWK RIVER AT MOHAWK ST. BRIDGE, HERKIMER, for the nine months ending June 30, 1916. Leo Laschen, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	381.8	380.4	380.05	381.8	384.0	381.86	387.45	381.7	379.2
2.....	383.0	380.6	380.55	382.15	383.15	381.46	388.0	382.15	378.95
3.....	382.95	381.1	380.4	383.6	382.2	381.1	385.7	382.2	379.15
4.....	384.1	381.25	381.25	383.9	381.7	381.0	385.4	381.75	379.3
5.....	384.2	381.25	381.75	383.3	381.6	381.2	391.0	381.75	379.2
6.....	383.4	381.05	381.75	385.0	381.7	380.9	383.55	381.4	379.45
7.....	382.9	381.1	381.6	384.75	382.45	381.06	383.1	379.35	380.0
8.....	382.55	380.3	381.2	383.8	380.75	381.26	383.0	379.15	380.05
9.....	382.65	380.25	381.5	383.05	380.7	381.4	382.0	379.55	379.7
10.....	382.95	380.15	381.7	382.45	380.9	381.56	381.45	379.6	379.2
11.....	382.95	380.4	381.1	381.85	381.05	381.3	381.4	379.45	379.1
12.....	382.7	380.9	380.95	380.65	381.0	381.26	381.8	379.85	379.2
13.....	382.35	380.6	379.7	380.4	380.95	381.6	382.0	379.15	379.35
14.....	381.9	380.6	379.85	380.95	379.9	381.5	382.5	379.15	379.1
15.....	383.35	381.75	380.1	381.9	379.75	380.46	382.45	379.9	379.3
16.....	382.6	381.65	380.4	383.1	380.1	380.3	382.35	379.75	379.25
17.....	382.65	380.9	380.55	383.0	379.7	380.5	382.55	381.8	379.0
18.....	382.4	380.7	380.5	381.75	379.4	380.56	382.0	383.2	379.55
19.....	383.0	381.25	381.4	381.15	379.25	380.76	381.35	384.2	279.95
20.....	382.7	381.15	381.1	380.9	379.35	381.06	380.5	383.9	379.7
21.....	382.65	381.6	381.2	381.6	379.3	380.76	380.0	383.45	379.3
22.....	382.45	381.45	380.8	382.65	380.1	380.56	379.6	383.4	379.2
23.....	381.65	381.0	380.25	383.6	381.1	380.8	380.05	381.65	379.25
24.....	381.5	380.85	379.8	384.95	380.75	380.9	380.4	380.8	379.05
25.....	381.1	380.85	381.0	384.4	381.25	380.76	380.45	380.65	379.35
26.....	380.8	380.85	381.9	383.8	382.25	380.76	380.4	380.2	379.2
27.....	380.65	380.7	382.5	384.7	382.8	380.36	380.45	379.65	379.9
28.....	380.6	380.8	382.45	385.45	382.25	381.6	380.4	379.4	381.45
29.....	380.3	380.9	382.45	384.9	381.75	384.7	380.1	379.2	381.7
30.....	380.95	380.45	382.45	384.5	.....	385.4	379.75	379.05	381.85
31.....	380.8	.....	382.0	383.95	.....	386.86	.....	379.3	.....

NOTE.—November, 1915, to March, 1916, inclusive, records not reliable.



## MOHAWK RIVER AT WASHINGTON STREET, HERKIMER

This station, established February 4, 1913, is located at the Washington street bridge over the Mohawk river, opposite the village of Herkimer. It is about 4,700 feet below dam No. 14 and about 2,700 feet above the mouth of West Canada creek. This section of the river is not canalized. The gage is a standard chain attached to the upstream side of the bridge and is read twice daily — between 6:00 and 6:30 A. M. and 5:00 and 6:30 P. M.— to tenths.

Daily elevation of water-surface (B. C. Datum) of MOHAWK RIVER AT WASHINGTON ST. BRIDGE, HERKIMER, for the nine months ending June 30, 1916. Leo Laschen, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	373.9	373.25	374.45	377.2	378.75	380.5	381.65	373.6	375.6
2.....	374.8	373.4	374.95	377.6	377.9	380.5	382.75	373.9	374.85
3.....	375.0	373.9	374.85	378.2	377.55	380.3	382.1	374.05	374.25
4.....	376.5	374.2	374.6	378.45	377.0	380.2	381.5	374.05	374.15
5.....	376.95	374.1	374.75	378.3	376.95	380.55	379.55	373.85	374.3
6.....	376.55	374.35	374.65	379.65	377.4	380.65	378.45	373.4	374.15
7.....	376.1	374.35	374.95	379.35	378.4	381.0	377.95	375.15	374.55
8.....	375.75	374.15	374.75	378.75	379.2	380.8	377.6	374.55	374.4
9.....	375.75	374.5	375.05	378.4	376.7	381.05	377.2	374.7	374.25
10.....	376.15	374.55	374.8	380.85	377.55	381.1	376.85	374.65	373.85
11.....	375.9	375.0	374.3	379.8	379.35	380.5	376.75	374.4	373.65
12.....	375.7	375.6	374.15	377.35	380.4	380.45	377.25	374.7	373.45
13.....	375.45	375.7	375.05	376.75	379.75	381.05	377.45	373.8	373.75
14.....	374.75	375.6	375.45	377.1	378.95	380.7	377.7	373.7	378.4
15.....	375.9	376.45	375.65	377.85	378.85	380.25	377.7	373.5	373.65
16.....	375.6	376.05	375.6	379.95	379.4	380.1	377.55	374.6	373.5
17.....	375.7	375.45	375.95	381.2	378.55	379.9	377.85	376.2	373.7
18.....	375.45	375.05	376.55	379.8	377.5	379.6	377.45	378.15	373.95
19.....	375.75	375.25	377.75	379.45	377.1	379.95	377.15	379.2	374.4
20.....	375.5	375.85	378.15	379.2	376.8	380.3	376.25	379.6	374.15
21.....	375.45	376.1	378.05	379.9	376.95	379.8	375.45	379.3	373.65
22.....	375.2	375.95	378.1	380.45	378.3	379.25	375.3	379.4	373.65
23.....	374.65	375.6	377.4	380.7	379.45	378.85	375.9	378.25	374.65
24.....	374.3	375.7	377.2	381.65	379.6	378.6	376.75	377.65	374.05
25.....	374.15	375.85	378.9	381.0	380.1	378.75	377.1	377.45	374.2
26.....	373.85	376.1	378.55	379.6	381.9	379.0	376.95	377.0	373.7
27.....	374.25	376.05	378.35	379.3	381.35	379.55	378.7	378.5	374.05
28.....	374.0	376.05	378.65	379.85	380.4	380.25	378.3	376.25	375.65
29.....	372.46	375.25	378.55	379.45	379.5	380.65	378.2	373.7	375.85
30.....	374.45	374.6	378.35	379.3	.....	380.3	375.95	374.7	375.55
31.....	373.7	.....	377.6	378.65	.....	381.05	.....	375.45	.....

NOTE.— November, 1915, to March, 1916, inclusive, records not reliable.

## MOHAWK RIVER ABOVE STATE DAM, LITTLE FALLS

This station, established February 4, 1904, is located just above the upper or State dam on the Mohawk river at Little Falls. The gage is a staff attached to the west wing-wall of the culvert over the stream from a waste-weir of the old Erie canal, and about 400 feet upstream from the Hansen avenue bridge over the old canal feeder. Readings are taken twice daily—at 8 A. M. and between 4 and 6 P. M.—to tenths. The State dam with crest averaging about Elev. 363.0 is not affected by Barge canal construction.

Daily elevation of water-surface (B. C. Datum) of MOHAWK RIVER ABOVE STATE DAM AT LITTLE FALLS, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	363.8	364.1	364.3	364.6	365.15	364.9	367.7	365.0	363.6
2.....	363.8	363.9	364.3	365.2	365.1	364.8	368.0	365.1	363.6
3.....	364.5	366.9	364.1	366.6	365.1	364.7	368.1	364.95	363.75
4.....	364.2	363.9	364.1	365.3	365.1	364.7	367.7	365.15	364.1
5.....	364.95	363.9	364.1	365.3	365.0	364.5	367.3	365.1	364.1
6.....	365.65	363.9	364.1	366.3	364.9	364.3	366.9	365.0	364.2
7.....	365.4	363.9	364.1	365.8	364.9	364.3	366.8	365.0	364.05
8.....	365.0	363.9	364.1	365.3	364.7	364.3	366.8	364.8	363.9
9.....	364.3	363.9	364.1	365.1	364.7	364.3	366.6	364.8	363.9
10.....	364.1	363.9	364.1	365.1	364.7	364.3	366.4	364.8	363.9
11.....	364.1	363.9	364.0	365.1	364.7	364.3	366.0	364.8	363.8
12.....	364.1	363.9	363.9	364.9	364.7	364.3	365.5	364.7	364.8
13.....	364.1	363.9	363.9	364.7	364.7	364.3	365.2	364.9	363.85
14.....	364.1	363.9	363.9	364.9	364.5	364.3	365.0	364.2	363.95
15.....	364.35	364.65	363.9	364.7	364.5	364.1	364.9	364.1	363.9
16.....	364.5	364.7	363.8	364.6	364.5	364.1	364.9	364.35	363.9
17.....	364.3	364.5	363.9	364.5	364.4	364.1	365.0	365.4	364.25
18.....	364.2	364.5	364.5	364.5	364.3	364.1	365.1	367.0	364.4
19.....	365.2	364.3	365.1	364.5	364.3	364.1	364.95	366.65	364.45
20.....	365.7	365.1	365.1	364.5	364.3	364.1	364.8	365.8	364.5
21.....	365.0	365.1	364.9	364.65	364.3	364.1	364.8	365.7	364.35
22.....	364.3	365.1	364.7	365.35	364.3	364.1	365.05	365.3	364.2
23.....	364.1	364.7	364.5	366.3	364.5	364.1	365.15	365.3	364.05
24.....	364.1	364.7	364.5	365.95	364.7	364.1	365.2	365.3	363.95
25.....	364.0	364.5	364.4	365.5	365.1	364.1	365.1	364.5	363.95
26.....	364.1	364.3	365.75	365.7	365.1	364.1	365.2	364.1	363.8
27.....	364.0	364.3	365.6	365.9	365.1	364.1	365.5	363.9	363.8
28.....	363.9	364.3	365.3	366.95	364.9	365.45	365.6	363.9	364.0
29.....	364.1	364.3	364.8	366.0	364.9	366.25	365.25	363.9	364.05
30.....	364.25	364.3	364.8	365.55	.....	366.95	365.1	363.9	363.9
31.....	364.2	.....	364.8	365.05	.....	367.05	.....	363.7	.....

NOTE.—Elevations April 1 to 15, inclusive, not from actual readings, but estimated in Resident Engineer's office from observations at other points.

**MOHAWK RIVER AT LOCK NO. 17, LITTLE FALLS**

This station is located on the Mohawk river at the lower end of lock No. 17 in the city of Little Falls. It is about 3.7 miles above and at the head of the canalized pool formed by the Rocky Rift dam and about 0.9 mile above the suspension bridge. The concrete vertical staff gage at the lower end of the lock is read irregularly by the local engineering force.

Daily elevation of water-surface (B. C. Datum) of MOHAWK RIVER AT LOCK No. 17, LITTLE FALLS, for the nine months ending June 30, 1916

DAY	April	May	June	DAY	April	May	June	DAY	April	May	June
1.....	327.2	323.2	322.7	11.....	321.5	.....	21.....	322.3	323.7	.....	.....
2.....	328.6	322.8	322.5	12.....	321.6	.....	22.....	322.8	323.2	.....	.....
3.....	326.8	322.7	322.5	13.....	.....	.....	23.....	323.4	324.7	.....	.....
4.....	325.6	323.0	323.4	14.....	320.8	.....	24.....	323.2	324.8	.....	.....
5.....	324.2	323.0	323.3	15.....	322.9	320.4	25.....	322.7	323.8	.....	.....
6.....	324.1	323.0	323.0	16.....	323.1	320.5	26.....	323.0	323.3	.....	.....
7.....	323.5	322.4	323.3	17.....	322.9	324.2	27.....	323.5	322.9	.....	.....
8.....	323.4	322.0	322.1	18.....	323.1	327.4	28.....	323.5	323.0	.....	.....
9.....	323.2	321.8	322.4	19.....	322.7	326.4	29.....	323.0	322.7	.....	.....
10.....	.....	321.7	.....	20.....	322.6	325.0	30.....	323.0	322.6	.....	.....
							31.....	.....	322.7	.....	.....

**MOHAWK RIVER AT SUSPENSION BRIDGE, LITTLE FALLS**

The suspension bridge across the Mohawk river just east of the city of Little Falls, is about 2.9 miles above the Rocky Rift dam, which has a fixed crest at Elev. 319.5 and a movable crest to maintain a low navigable surface in this canalized section of the river at Elev. 322.5.

Occasional water-surface elevations were obtained by the local engineering force, as follows: 1915, September 20, 323.2; 23, 323.0; 24, 323.0; November 21, 324.7; 26, 323.4; 1916, January 6, 325.5; 22, 327.0; 23, 326.2; 28, 326.8.

## BARGE CANAL AT INDIAN CASTLE

This station indicates the water-surface in the Barge canal above the guard-gate at Indian Castle, about five miles east of Little Falls. Castle creek enters the Barge canal from the south, just west or above the guard-gate, and is diverted westward through the canal land-line about 3,400 feet, entering the Mohawk river just above the Rocky Rift dam. Low navigable surface in this section of the canal is at Elev. 322.5.

A vertical staff gage on the upstream, or west face of the guard-gate, is read to tenths once daily — generally about 7 A. M.

Daily elevation of water-surface (B. C. Datum) of BARGE CANAL ABOVE GUARD-GATE, INDIAN CASTLE, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	323.0	323.0	323.2	321.9	324.5	321.8	325.8	322.5	322.6
2.....	322.7	322.7	320.0	322.8	323.6	321.6	320.8	322.6	322.5
3.....	322.3	322.8	320.0	323.8	323.6	321.0	320.3	322.3	322.5
4.....	322.2	322.9	319.5	323.8	323.6	321.1	324.5	322.6	323.4
5.....	322.6	323.0	320.5	323.0	323.4	321.3	323.5	322.5	323.3
6.....	325.5	323.2	320.8	324.6	323.4	321.1	323.4	322.2	323.0
7.....	325.7	323.0	320.5	323.8	323.0	321.1	323.1	321.7	323.3
8.....	324.5	323.0	320.8	323.5	322.8	321.1	322.5	321.8	322.1
9.....	323.5	323.1	320.6	323.5	322.0	321.1	322.5	321.9	322.1
10.....	323.3	323.0	320.8	323.5	321.8	321.2	322.5	321.5	322.1
11.....	323.2	323.0	320.8	323.0	321.8	321.1	322.5	321.3	321.9
12.....	323.2	322.7	320.8	323.0	321.8	321.1	323.4	321.5	322.0
13.....	323.2	323.0	320.7	323.3	321.8	321.1	322.8	320.8	322.1
14.....	323.0	322.8	320.6	323.5	321.8	321.1	322.6	320.8	322.6
15.....	323.6	324.0	320.6	323.5	321.4	321.1	322.6	320.6	322.4
16.....	323.8	323.5	a	323.5	321.4	321.1	322.8	320.5	322.3
17.....	323.3	323.5	a	323.5	321.4	320.3	322.6	324.9	323.3
18.....	323.2	323.1	321.1	323.5	321.4	320.5	322.8	326.2	323.5
19.....	324.3	323.5	320.9	323.0	321.4	320.3	322.3	325.9	323.5
20.....	323.8	323.6	320.6	323.0	321.4	320.6	322.1	324.6	323.8
21.....	323.5	324.3	320.5	323.5	321.4	320.7	322.1	323.3	323.6
22.....	323.2	324.2	320.4	325.6	321.0	320.8	322.1	323.0	323.3
23.....	322.7	323.6	321.4	324.7	321.3	320.8	322.1	323.8	322.5
24.....	322.6	323.4	321.6	324.3	321.1	320.6	322.7	324.4	322.4
25.....	322.8	323.3	a	324.2	321.3	320.8	322.4	323.8	322.3
26.....	322.7	a	a	323.6	322.1	320.8	322.6	323.3	322.0
27.....	323.1	323.2	322.7	324.4	322.1	321.1	323.1	322.8	322.3
28.....	323.0	323.3	323.2	325.0	322.1	322.1	322.8	322.8	322.7
29.....	323.0	323.5	321.5	323.0	321.8	324.3	322.7	322.6	322.7
30.....	323.1	323.5	321.5	323.0	.....	325.2	322.7	322.6	322.4
31.....	323.1	.....	321.3	323.0	.....	325.3	.....	322.6	.....

a No record.

## MOHAWK RIVER AT ST. JOHNSVILLE

This station, established January 22, 1913, is located at the highway bridge crossing the Mohawk river at the village of St. Johnsville. It is about 1.3 miles below the Mindenville retention dam opposite Barge canal lock No. 16 and about 5.3 miles above the movable dam (No. 11) at Fort Plain. A standard chain gage attached to the upstream side of the bridge is read twice daily — at 8 A. M. and 4 P. M. — to tenths.

Daily elevation of water-surface (B. C. Datum) of MOHAWK RIVER at St. Johnsville, for the nine months ending June 30, 1916. H. C. Dowling, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	294.5	300.85	301.55	302.15	302.35	301.75	306.85	299.5	300.4
2.....	294.15	299.9	300.6	303.15	300.4	301.4	306.2	299.5	300.3
3.....	297.3	300.3	299.05	305.25	299.75	301.1	304.25	299.2	300.4
4.....	296.15	300.9	297.75	304.75	299.25	301.0	303.05	299.95	300.5
5.....	295.8	300.7	296.15	304.4	298.4	300.55	301.25	299.6	300.75
6.....	300.95	300.2	295.6	306.9	298.4	300.85	301.75	298.75	300.5
7.....	300.25	299.95	295.75	306.1	298.3	300.95	301.05	297.75	300.75
8.....	298.6	300.3	295.75	304.85	298.1	301.3	299.9	297.7	300.3
9.....	297.3	300.3	295.8	304.95	297.75	301.0	298.45	297.45	300.45
10.....	296.85	299.85	295.55	306.1	298.0	301.05	299.35	297.4	300.65
11.....	295.6	299.65	295.55	306.1	297.75	301.0	299.7	297.15	300.2
12.....	295.5	299.7	295.5	305.0	298.15	300.95	301.55	297.1	300.75
13.....	295.55	300.5	295.1	304.5	298.65	301.0	300.8	298.1	300.35
14.....	295.25	299.75	296.0	304.35	301.7	301.5	301.5	299.75	301.25
15.....	295.75	301.3	297.25	303.8	300.8	301.1	301.15	300.5	300.7
16.....	298.5	301.0	298.75	303.8	300.85	301.05	301.35	300.35	300.95
17.....	297.5	301.15	299.2	303.75	300.6	301.2	301.35	304.15	301.7
18.....	296.15	300.5	299.7	303.6	300.85	301.05	301.35	305.8	301.2
19.....	296.4	300.7	302.05	303.65	299.65	300.55	300.1	305.6	301.0
20.....	296.55	302.1	301.4	303.95	299.25	301.2	299.95	303.0	301.5
21.....	298.2	301.9	300.2	304.5	299.6	301.05	300.15	301.3	300.85
22.....	299.7	301.35	298.35	304.9	299.4	301.15	300.85	301.1	300.9
23.....	295.9	300.9	298.85	308.75	300.0	300.85	301.35	302.95	300.9
24.....	295.6	300.0	298.55	307.2	299.8	300.85	301.15	302.3	300.5
25.....	295.4	300.45	297.85	306.1	300.0	300.95	300.45	301.35	300.6
26.....	295.45	300.6	303.4	306.0	301.1	300.9	300.65	301.05	301.1
27.....	295.9	300.4	304.3	307.1	302.35	301.25	301.3	300.75	300.8
28.....	296.65	300.65	302.55	308.65	302.45	303.25	301.1	300.5	300.7
29.....	298.7	300.65	299.6	302.8	301.9	307.4	300.25	300.75	300.45
30.....	300.2	300.65	300.35	301.5	.....	307.45	300.0	300.3	300.65
31.....	301.15	.....	302.15	300.45	.....	309.4	.....	300.4	.....

## MOHAWK RIVER AT FORT PLAIN

This station, established December 30, 1905, is located at the River street highway bridge over the Mohawk river, connecting the villages of Fort Plain and Nelliston. It is about 0.4 mile below the movable dam (No. 11) at Fort Plain and about 2.9 miles above the movable dam (No. 10) at Canajoharie. The gage is a standard chain secured to the downstream side of the bridge, about 50 feet from the south or right bank abutment and is read twice daily — at 9 A. M. and 4 P. M.— to tenths.

Daily elevation of water-surface (B. C. Datum) of MOHAWK RIVER AT FORT PLAIN, for the nine months ending June 30, 1916. Eugene Snell, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	286.15	287.05	285.3	293.4	294.45	293.85	303.5	291.05	291.8
2.....	287.65	286.35	288.15	294.35	291.9	293.3	298.8	291.1	291.15
3.....	288.75	285.95	287.3	296.3	292.1	292.95	296.45	291.0	291.2
4.....	287.7	286.0	287.65	295.45	290.3	292.35	295.0	291.4	291.7
5.....	287.15	286.25	286.75	295.3	289.55	291.95	292.8	291.05	291.7
6.....	291.75	286.9	287.2	300.1	289.6	291.85	292.8	291.15	291.85
7.....	291.3	287.5	286.9	299.05	289.25	291.5	292.2	289.6	291.25
8.....	287.5	285.8	286.35	297.55	288.7	291.75	291.0	289.15	291.2
9.....	288.45	286.7	287.15	295.95	289.8	291.55	291.15	288.95	291.3
10.....	287.85	286.4	286.7	295.65	294.7	291.5	290.6	288.7	291.4
11.....	286.65	286.15	286.6	296.0	292.3	292.1	291.85	287.8	291.25
12.....	286.25	286.15	288.45	295.35	291.65	291.1	293.15	287.4	291.4
13.....	286.25	286.5	291.05	295.4	296.35	291.2	292.15	287.15	291.4
14.....	286.1	286.0	291.6	295.55	296.0	291.25	291.7	286.45	291.65
15.....	287.5	287.1	293.35	294.8	295.35	291.05	292.8	287.6	291.35
16.....	289.55	288.5	293.95	294.65	295.2	291.1	292.65	289.6	291.2
17.....	288.9	288.7	294.15	294.7	295.15	291.15	292.55	293.5	293.5
18.....	288.0	288.4	294.45	294.35	294.95	291.1	292.45	297.6	292.45
19.....	287.55	287.95	296.4	294.4	294.1	292.1	291.4	296.5	292.1
20.....	289.95	291.15	296.35	294.55	293.1	291.6	291.3	293.7	292.5
21.....	290.55	295.45	295.2	294.9	293.1	291.05	291.2	291.65	292.15
22.....	288.25	293.7	294.15	295.6	293.05	291.6	291.8	291.3	291.45
23.....	287.2	289.1	293.3	300.15	293.15	291.55	292.7	291.55	291.6
24.....	287.2	287.8	293.15	298.9	293.2	290.6	292.45	292.5	291.4
25.....	285.4	288.35	292.8	298.05	293.3	291.1	291.6	291.8	291.5
26.....	286.25	288.5	295.35	297.9	295.05	292.6	291.9	291.3	291.75
27.....	287.2	287.8	296.85	299.3	295.45	292.15	292.45	291.55	291.25
28.....	286.6	287.9	296.55	302.05	295.35	293.2	292.15	291.7	291.5
29.....	286.5	287.8	294.5	297.8	294.1	297.75	291.45	291.8	291.3
30.....	286.0	288.65	294.0	295.6	.....	300.35	291.25	291.75	291.7
31.....	287.0	.....	293.65	294.7	.....	303.65	.....	291.15	.....

## MOHAWK RIVER AT CANAJOHARIE

This station, established September 16, 1908, is located at the highway bridge over the Mohawk river, connecting the villages of Canajoharie and Palatine Bridge. It is about 1,900 feet below the movable dam (No. 10) at Canajoharie. A standard chain gage attached to the bridge is read twice daily to tenths.

Daily elevation of water-surface (B. C. Datum) of MOHAWK RIVER AT CANAJOHARIE, for the nine months ending June 30, 1916. Sanford Bracebridge, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	279.75	279.75	280.45	283.1	288.8	285.9	298.15	286.1	285.65
2.....	279.25	279.25	280.05	283.75	285.9	286.1	293.85	286.25	286.85
3.....	281.85	279.55	279.55	284.05	284.9	285.3	290.65	286.7	285.6
4.....	281.05	280.0	279.75	284.1	285.15	285.2	288.75	287.25	286.05
5.....	281.0	280.5	280.3	286.95	285.05	285.15	287.55	286.55	285.85
6.....	284.45	279.95	281.2	292.2	284.95	285.0	286.45	286.2	285.7
7.....	284.5	279.55	282.1	288.75	285.15	281.7	285.9	285.85	285.55
8.....	282.85	279.1	280.85	288.1	285.4	284.4	285.1	285.55	285.7
9.....	280.95	279.45	281.55	289.3	286.0	281.0	281.65	285.6	285.65
10.....	280.25	279.3	283.1	287.55	288.05	284.0	284.3	285.1	285.35
11.....	279.75	279.0	282.7	287.4	289.2	283.9	284.7	285.1	285.65
12.....	279.3	279.3	282.8	283.65	288.85	283.9	285.65	284.55	285.9
13.....	279.5	279.8	282.5	286.0	288.7	283.9	286.6	284.7	285.65
14.....	278.9	279.5	282.9	286.0	288.4	284.05	287.0	284.8	285.3
15.....	281.5	280.2	283.5	285.7	287.9	284.2	286.3	285.05	285.5
16.....	281.95	279.75	283.4	285.5	286.8	284.2	286.0	285.4	286.35
17.....	280.65	280.3	283.5	285.2	286.6	281.0	285.85	287.6	286.25
18.....	280.2	280.65	285.0	284.85	286.3	283.9	285.8	289.85	285.8
19.....	279.6	281.9	284.6	284.5	286.1	283.9	285.15	289.4	286.5
20.....	280.7	283.35	284.05	284.4	285.9	283.7	284.5	288.35	286.1
21.....	280.85	284.0	283.9	284.7	285.8	281.15	284.0	288.0	285.8
22.....	280.6	284.7	283.95	287.15	285.7	283.6	281.0	288.9	285.75
23.....	280.3	283.25	283.65	292.05	285.55	284.4	285.45	288.4	286.1
24.....	279.95	282.05	283.25	291.6	285.4	283.0	286.0	287.5	286.0
25.....	279.6	281.1	283.0	289.95	285.85	283.55	285.65	286.3	285.45
26.....	279.55	280.45	282.3	289.8	291.15	284.35	286.0	286.0	285.9
27.....	279.25	279.95	281.9	291.15	289.5	285.55	286.3	286.2	285.35
28.....	278.7	279.25	282.2	294.65	287.95	286.8	286.45	286.05	286.5
29.....	278.55	279.55	282.35	292.75	287.3	288.2	286.15	286.25	286.1
30.....	278.1	280.3	282.9	289.35	.....	292.35	289.1	286.0	285.85
31.....	279.05	.....	282.8	283.75	.....	294.85	.....	285.4	.....

## MOHAWK RIVER AT FONDA

This station, established April 29, 1906, is located at the highway bridge over the Mohawk river, connecting the villages of Fonda and Fultonville. This bridge is about 4.6 miles below movable dam No. 9 near Yosta, and about 5 miles above movable dam No. 8 and the mouth of Schoharie creek at Tribes Hill.

Previous to 1913, discharge was computed at this station, but this was discontinued owing to the destruction of the control due to Barge canal construction work and the station has since been maintained for surface elevation only.

A standard chain gage attached to the downstream side of the middle span of the bridge is read twice daily — between 7 and 8 A. M. and 4 and 6 P. M.— to tenths.

Daily elevation of water-surface (B. C. Datum) of MOHAWK RIVER AT FULTONVILLE BRIDGE, FONDA, for the nine months ending June 30, 1916. Richard Kilmartin, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	277.75	272.7	273.8	275.5	281.0	276.7	285.5	276.25	277.55
2.....	276.4	272.6	273.9	275.8	279.5	276.55	285.2	277.15	277.6
3.....	274.7	272.5	273.8	278.45	277.75	276.15	281.5	278.0	278.2
4.....	273.7	272.5	273.3	278.25	276.6	275.75	280.2	278.7	278.2
5.....	273.5	272.7	274.75	277.9	276.1	275.55	278.55	278.5	278.1
6.....	277.1	273.2	277.3	280.7	276.0	275.25	278.8	278.3	278.1
7.....	276.75	273.1	277.8	280.4	275.75	275.2	277.4	278.3	278.2
8.....	276.1	272.6	277.75	279.0	275.25	275.3	277.1	278.45	278.15
9.....	273.95	272.6	277.9	277.95	275.3	275.3	276.7	278.3	278.2
10.....	273.7	272.6	276.55	276.7	275.2	275.4	276.55	278.3	278.75
11.....	273.1	272.3	275.2	276.9	275.25	275.45	277.15	278.2	278.55
12.....	272.3	272.4	273.95	276.75	275.4	275.2	278.7	278.3	278.3
13.....	272.45	272.3	273.2	276.65	275.3	275.1	279.25	278.3	277.95
14.....	272.35	272.3	273.2	276.95	275.15	275.3	279.4	278.3	278.15
15.....	273.15	272.3	273.0	276.15	274.85	275.3	279.0	278.3	278.2
16.....	275.05	272.1	273.95	276.1	275.3	275.3	277.95	278.0	278.35
17.....	274.25	274.5	274.4	276.4	275.2	275.05	277.45	278.95	278.5
18.....	273.55	274.3	275.35	275.9	275.1	275.15	278.1	281.15	278.45
19.....	273.2	274.35	276.5	275.85	274.9	274.95	277.3	280.8	278.6
20.....	275.3	276.35	276.75	276.0	274.9	274.75	277.2	279.6	278.6
21.....	275.75	276.3	276.7	276.2	275.0	275.1	277.1	278.6	278.05
22.....	274.8	276.45	276.1	276.45	274.9	274.9	277.25	278.1	278.1
23.....	273.35	275.25	275.45	279.2	274.9	274.65	277.9	278.45	278.05
24.....	272.95	274.3	274.85	280.6	275.3	274.6	278.1	278.2	277.9
25.....	272.7	273.9	275.15	279.55	275.55	274.75	277.55	278.3	277.9
26.....	272.7	273.9	276.2	279.45	276.3	274.95	277.2	278.3	278.1
27.....	273.05	273.9	278.45	281.35	277.35	274.45	277.6	278.25	278.4
28.....	272.95	273.55	278.7	284.85	277.7	276.75	276.8	278.05	278.15
29.....	272.7	273.8	276.7	282.6	277.2	282.2	276.7	277.9	278.35
30.....	272.5	273.9	276.0	280.95	.....	284.55	276.5	277.8	278.2
31.....	272.6	.....	275.7	279.45	.....	283.35	.....	277.7	.....



## MOHAWK RIVER AT TRIBES HILL

This station, established January 7, 1904, is located at the suspension bridge over the Mohawk river, connecting the villages of Tribes Hill and Fort Hunter. This bridge lies just below movable dam No. 8 at Tribes Hill and over the lower guide-wall of Barge canal lock No. 12.

Discharge was formerly computed at this station, but this was discontinued because of the destruction of the control due to Barge canal construction. The station is now maintained for water-surface elevations only. The gage is a standard chain attached to the downstream side of the bridge near the left bank or north end and is read twice daily — at 8 A. M. and 4 P. M. — to tenths.

Daily elevation of water-surface (B. C. Datum) of MOHAWK RIVER AT TRIBES HILL for the nine months ending June 30, 1916. E. Bobolin and A. W. Van Vliet, Observers

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	266.95	265.3	266.9	265.1	269.7	246.95	274.4	267.7	267.1
2.....	266.75	265.3	267.05	266.05	269.25	267.05	274.85	267.35	267.05
3.....	266.8	265.1	266.85	266.45	267.5	267.0	271.45	267.3	266.9
4.....	265.9	264.65	266.9	266.1	265.15	267.0	270.75	267.9	267.15
5.....	266.65	265.05	266.8	266.15	265.05	267.15	269.0	267.7	267.05
6.....	268.25	266.4	267.4	271.15	265.4	267.85	269.45	267.35	267.0
7.....	269.3	265.6	267.35	270.1	265.2	269.0	269.0	267.06	267.0
8.....	267.15	265.2	266.85	267.7	264.1	269.0	267.6	267.35	267.1
9.....	266.55	265.1	266.8	266.35	264.1	269.2	267.2	267.05	267.0
10.....	266.85	265.0	265.0	266.15	264.15	268.2	266.65	266.65	267.05
11.....	266.4	265.85	263.15	266.35	263.9	268.25	267.5	266.85	265.75
12.....	266.05	266.2	263.15	266.45	263.4	268.05	269.25	266.75	266.2
13.....	266.55	265.05	261.2	265.5	263.3	268.05	268.75	266.55	265.95
14.....	267.1	265.1	263.55	266.2	263.05	267.7	268.45	266.8	266.2
15.....	267.1	265.15	263.45	266.15	262.85	267.5	269.65	266.8	266.05
16.....	267.25	266.35	263.5	266.1	262.9	267.65	268.9	266.65	266.25
17.....	267.2	266.45	263.75	265.95	263.35	267.45	263.7	263.45	266.75
18.....	266.3	266.5	264.7	266.05	263.25	267.5	268.95	271.4	267.45
19.....	266.15	266.75	266.75	265.8	262.45	267.4	267.8	270.35	267.2
20.....	267.15	266.95	266.6	266.05	262.45	267.05	267.2	268.65	267.4
21.....	267.2	267.45	265.55	266.05	262.4	267.1	266.9	267.75	267.15
22.....	266.1	267.5	266.15	266.15	262.05	266.95	267.2	266.9	267.25
23.....	265.3	267.5	264.3	273.75	262.15	267.15	263.75	267.9	266.7
24.....	265.7	267.1	264.4	271.05	262.35	266.45	268.8	267.55	266.85
25.....	265.55	267.45	264.0	269.5	262.45	266.2	268.4	267.55	267.1
26.....	265.3	267.4	269.65	269.4	266.25	266.05	267.05	267.2	267.1
27.....	265.4	267.1	263.4	271.9	267.2	266.0	267.85	266.95	267.35
28.....	265.9	267.15	263.1	273.25	266.55	263.1	267.9	266.8	267.1
29.....	265.15	267.35	267.1	271.15	266.45	273.45	268.5	267.0	267.05
30.....	265.1	267.4	266.45	263.15	.....	275.4	268.1	267.05	266.8
31.....	264.95	.....	265.3	267.35	.....	275.2	.....	267.15	.....

## MOHAWK RIVER AT SCHENECTADY

This station, established April 3, 1904, is located at the Washington avenue bridge over the Mohawk river between Schenectady and Scotia, commonly known as the Scotia bridge. This station is four miles above the site of the old State dam at Rexford, which had a crest 675 feet long at Elev. 209.5, but is now submerged by the closure on June 9, 1913, of the Vischer Ferry dam, with a crest 1,918.7 feet long at Elev. 211.0, located 4.3 miles farther downstream.

A staff gage secured to the downstream end of the first pier from the right-hand or east bank is read twice daily — at 8 A. M. and between 4 and 6 P. M.— to tenths.

Daily elevation of water-surface (B. C. Datum) of MOHAWK RIVER AT SCHENECTADY, for the nine months ending June 30, 1916. Wm. C. Vrooman, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	211.75	211.85	212.5	212.1	217.25	213.0	224.85	213.0	211.9
2.....	211.8	211.8	212.5	211.8	215.55	213.0	226.45	212.8	211.7
3.....	211.85	211.8	212.25	212.55	214.0	213.0	218.9	213.0	212.15
4.....	211.9	211.8	212.0	212.8	213.3	213.0	217.4	213.0	211.8
5.....	212.15	211.8	211.86	213.25	213.0	212.8	215.45	213.05	211.95
6.....	213.3	212.2	211.75	215.3	213.05	212.6	215.7	212.9	212.15
7.....	213.5	212.05	212.0	216.85	213.1	212.4	215.8	212.3	211.75
8.....	213.0	211.85	212.15	214.75	212.9	212.4	214.4	212.5	211.85
9.....	212.75	211.85	212.1	214.2	212.8	212.3	214.0	212.75	211.8
10.....	212.75	211.8	212.2	213.8	212.8	212.3	214.05	212.3	211.8
11.....	212.05	211.8	212.6	213.5	212.8	212.3	214.7	212.4	211.8
12.....	211.9	211.8	212.6	213.3	212.6	212.3	215.25	211.7	212.1
13.....	211.9	211.75	211.85	213.8	212.3	212.1	215.4	212.1	211.95
14.....	212.1	211.8	211.8	214.0	212.3	212.1	214.5	211.7	212.1
15.....	212.45	211.8	211.8	213.3	212.3	212.1	216.3	211.6	211.9
16.....	212.8	212.55	211.8	213.4	212.3	212.1	215.3	211.85	212.0
17.....	212.7	212.45	211.8	213.3	212.5	212.1	215.1	213.75	212.65
18.....	212.2	212.15	212.15	212.8	212.6	212.1	215.2	216.3	212.7
19.....	211.85	212.3	212.75	212.8	212.6	212.1	214.5	215.3	212.6
20.....	212.8	213.35	213.5	212.8	212.6	212.1	213.8	214.05	212.5
21.....	212.85	213.3	213.25	212.8	212.6	212.1	213.7	213.0	212.4
22.....	212.75	213.3	212.9	213.0	212.6	212.1	213.9	212.6	212.3
23.....	212.0	212.8	212.55	217.35	212.6	212.1	214.95	212.35	211.95
24.....	212.1	212.4	212.65	216.6	212.6	212.1	215.1	213.55	211.8
25.....	211.95	212.3	212.4	215.25	212.6	212.1	214.45	212.75	211.9
26.....	211.9	212.3	212.4	215.4	212.95	212.1	213.85	212.5	211.65
27.....	211.95	212.3	213.8	217.3	214.6	212.2	213.75	212.3	211.95
28.....	212.1	212.2	214.75	220.9	213.7	212.75	213.55	212.1	212.2
29.....	211.9	212.	214.7	211.8	213.2	215.9	213.8	212.0	212.0
30.....	211.9	212.4	212.8	217.3	.....	218.35	213.35	211.8	211.85
31.....	211.85	.....	212.5	215.9	.....	222.65	.....	211.5	.....

## MOHAWK RIVER AT REXFORD

This station, originally established by the United States Deep Waterways Commission December 8, 1898, and now maintained by this Department, is located on the Mohawk river at Rexford (Aqueduct) about 3.7 miles below the N. Y. C. & H. R. R. R. bridge at Schenectady. Previous to January 20, 1915, a chain gage was located on the right or south abutment, a few feet above the crest of the old State dam. Beginning January 20, 1915, a staff gage on the upstream side of the south abutment of the old Erie canal aqueduct has been read. The aqueduct is 800 feet below the dam. The State dam with crest 675 feet long at Elev. 209.5 was submerged by the closure on June 9, 1913, of the new Vischer Ferry dam with a crest length of 1,918.7 feet at Elev. 211.0, located 4.3 miles farther downstream. The gage is read once daily — during the morning — to nearest half-foot.

Daily elevation of water-surface (B. C. Datum) of MOHAWK RIVER AT CANAL AQUEDUCT, REXFORD, for the nine months ending June 30, 1916. J. Reepmeyer, Jr., Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	212	212	212	213	216	213	223	213	211.5
2.....	212	211.5	212	213	215	213	225	213	211.5
3.....	212	211.5	212	213	215	213	220	213	211.5
4.....	212	211.5	212	215	214	213	218	213	211.5
5.....	212	211.5	212	216	214	213	216	213	211.5
6.....	212	211.5	212	215	214	213	215	212.5	211.5
7.....	212	211.5	212	214	213	213	214	212.5	211.5
8.....	212	211.5	212	214	213	213	213.5	212.5	211.5
9.....	212	211.5	212	213.5	213	213	213.5	212.5	211.5
10.....	212	211.5	212	213.5	213	213	213.5	212.5	211.5
11.....	212	211.5	212	213	213	213	214.5	212	211.5
12.....	212	211.5	212	213	213	213	214	212	211.5
13.....	212	211.5	212	213	213	213	213.5	212	211.5
14.....	212	211.5	212	213	213	213	213.5	212	211.5
15.....	212	211.5	212	213	212.5	213	214.5	212	211.5
16.....	212	211.5	212	213	212.5	213	214	213	211.5
17.....	212	211.5	212	213	212.5	213	213.5	214	211.5
18.....	212	211.5	212	213	212.5	213	213.5	215	212
19.....	212	212	212.5	213	212.5	213	213.5	214	212
20.....	212	212.5	213	213	212.5	213	213.5	213.5	212
21.....	212	212.5	213.5	213	212.5	213	213.5	212	211.5
22.....	212	212.5	213.5	213.5	212.5	213	213.5	212.5	211.5
23.....	212	212	213.5	215	212.5	213	213.5	212	211.5
24.....	212	212	213	214	212.5	213	213.5	212	211.5
25.....	212	212	213	213.5	213	213	213	212	211.5
26.....	212	212	213	213.5	214	213	213	212	211.5
27.....	212	212	213	214.5	214	213	213	212	211.5
28.....	212	212	213	216	213.5	213	213	212	212
29.....	212	212	213	218	213.5	214	213	212	212
30.....	212	212	213	221	.....	215.8	213	212	212
31.....	212	.....	213	219	.....	220.75	.....	212	.....

**MOHAWK RIVER AT VISCHER FERRY DAM**

**Location.**—At the Vischer Ferry dam, Schenectady county, about 7.8 miles below the N. Y. C. & H. R. R. R. bridge at Schenectady and about 13 miles above the mouth of the river at Cohoes, replacing the station at Vischer Ferry about 1 mile below the dam.

**Records available.**—June 24, 1913, to June 30, 1916.

**Drainage area.**—3,400 square miles. (Measured on U. S. Geological Survey topographic maps.)

**Gage.**—Gurley weight-driven printing water-stage recorder, set over float well in the northwest corner of the basin above the dam. It recorded the actual head of water on the crest of the spillway.\* On April 2, 1916, the water-stage recorder was destroyed by the ice and its record from February 24 to date was lost.

From March 29 to June 30 the gage on the concrete at the entrance to the lock has been used.

**Diversions.**—During 1914, water was diverted into the Erie canal at the temporary lock at the north end of the dam and the recorder showing the head on the spillway made no record of the water passing into the canal. Occasional measurements of the flow in this canal were made at bridge 48, about 1 mile downstream.

During the spring of 1915, the Crescent dam (next downstream) was closed and when the navigation season opened on May 15, 1915, canal boats were locked down through the Barge canal lock No. 7. The following estimates of discharge include the flow over the spillway and through the lock and water-wheels.

**Extremes of discharge.**—Current period: Maximum stage recorded, 6.9 feet at 2 P. M., April 2; discharge, approximately 113,000 second-feet. Minimum stage recorded, 0.425 foot at 6 P. M., November 13; discharge, 1,380 second-feet.

1913–1916: Maximum stage recorded, 7.6 feet just before noon, March 28, 1914, determined by leveling from flood-marks; approximate discharge estimated by New York State Engineer, 140,000 second-feet. This stage lasted but a few moments and was caused by the breaking of an ice jam near Schenectady.†

\*Crest of spillway, Elev. 211.0, B. C. datum.

†Maximum recorded open-water flood, March 28, 1913, estimated by Department of State Engineer, 100,000 second-feet.

Minimum stage recorded, 0.18 foot from 4 A. M. to 5 A. M., and 4 P. M. to 6 P. M., October 31, 1914; discharge, 290 second-feet.

**Accuracy.**—Rating for low stages based on discharge measurements made before the closing of Crescent dam, good for these stages and fairly good for high stages. Fluctuations in stage make mean daily gage height based on two observations per day uncertain. Record as a whole is fairly good.

**Coöperation.**—Established and maintained by the United States Geological Survey in coöperation with the State Conservation Commission. Gage heights from March 29 to June 30 observed by the lock-tenders.

No discharge measurements have been made since the closing of the Crescent dam.

Daily gage height, in feet, of MOHAWK RIVER AT VISCHER FERRY DAM, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	0.85	0.69	1.00	1.02	2.15	.....	4.0	1.40	0.80
2.....	0.64	0.69	1.08	1.08	2.15	.....	5.0	1.35	0.70
3.....	0.82	0.62	0.88	1.42	1.65	1.06	3.45	1.30	0.90
4.....	0.91	0.57	0.76	1.52	1.34	.....	3.0	1.40	0.75
5.....	0.88	0.65	0.65	1.47	1.21	.....	2.3	1.45	0.90
6.....	1.31	0.70	0.62	1.98	1.24	.....	2.5	1.30	1.00
7.....	1.51	0.69	0.69	2.5	1.24	.....	2.4	1.10	0.85
8.....	1.25	0.62	0.69	1.97	1.14	.....	1.90	1.10	0.85
9.....	1.01	0.68	0.72	1.69	1.12	0.90	1.78	1.15	0.85
10.....	0.93	0.65	0.94	1.33	1.11	.....	1.65	0.85	0.80
11.....	0.80	0.59	1.37	1.35	1.10	0.86	1.85	0.90	0.70
12.....	0.68	0.64	0.99	1.35	1.07	.....	2.3	0.70	0.50
13.....	0.66	0.58	.....	1.25	1.07	.....	2.3	0.70	1.00
14.....	0.70	0.62	.....	1.28	1.06	.....	2.0	0.69	0.90
15.....	0.88	0.63	0.50	1.23	1.04	.....	2.65	0.50	0.95
16.....	1.26	1.07	0.54	1.17	1.04	.....	2.25	0.80	0.80
17.....	1.17	1.05	0.63	1.10	1.04	0.79	2.1	1.95	1.20
18.....	0.93	0.93	0.75	1.07	1.04	.....	2.0	2.65	1.15
19.....	0.89	0.81	0.98	1.01	0.96	.....	1.90	2.4	1.25
20.....	1.09	1.38	1.30	1.04	0.81	.....	1.75	1.85	1.15
21.....	1.26	1.54	1.18	1.10	0.82	0.99	1.60	1.45	1.15
22.....	1.00	1.40	1.04	1.13	0.88	.....	1.70	1.25	0.90
23.....	0.80	1.23	0.92	2.25	0.88	.....	2.15	1.45	0.90
24.....	0.77	1.02	0.90	2.25	.....	.....	2.15	1.55	0.80
25.....	0.70	0.99	0.88	1.90	.....	.....	1.90	1.25	0.75
26.....	0.66	0.92	1.07	1.84	.....	.....	1.75	1.05	0.80
27.....	0.70	0.94	1.81	2.3	.....	.....	1.70	1.05	0.70
28.....	0.75	0.86	1.74	2.95	.....	1.06	1.79	0.99	1.25
29.....	0.67	0.92	1.55	3.03	.....	2.05	1.65	1.00	1.00
30.....	0.66	0.99	1.22	2.15	.....	2.8	1.55	0.90	0.90
31.....	0.61	.....	1.10	1.80	.....	3.75	.....	0.70	.....

NOTE.—Mean daily gage heights, October 1 to February 23, are each the mean of 24 hourly gage heights for each day from water-stage recorder. Gage heights, March 3, 9, 11, 17, 21 and 28, are single observations made during inspection of the water-stage recorder. Daily gage heights, March 29 to April 2, are each the mean of 24 hourly observations on the concrete gage at the head of the lock. Gage heights, April 3 to June 30, are each the mean of two observations per day on the same gage. Gage height affected by ice, February 13 to 19, inclusive.

Daily discharge, in second-feet, of MOHAWK RIVER AT VISCHER FERRY DAM, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	4,710	3,340	6,040	6,220	19,600	7,220	50,200	10,100	4,230
2.....	2,960	3,310	6,830	6,820	19,600	6,920	70,000	9,560	3,380
3.....	4,450	2,780	4,960	10,300	13,000	6,620	40,100	9,010	5,120
4.....	5,270	2,360	3,860	11,400	9,460	6,420	32,400	10,100	3,800
5.....	4,970	3,010	2,980	10,900	8,120	6,020	21,700	10,600	5,130
6.....	9,170	3,410	2,740	17,200	8,420	5,750	24,600	9,010	6,020
7.....	11,400	3,330	3,300	24,600	8,420	5,570	23,100	7,010	4,690
8.....	8,550	2,780	3,300	17,100	7,420	5,390	16,200	7,010	4,700
9.....	6,160	3,240	3,540	13,500	7,220	5,120	14,600	7,510	4,690
10.....	5,480	3,010	5,480	9,350	7,120	4,850	13,000	4,690	4,230
11.....	4,240	2,510	9,790	9,570	7,020	4,760	13,800	5,110	3,380
12.....	3,290	2,910	5,930	9,570	6,720	4,580	21,700	3,370	1,890
13.....	3,120	2,450	3,380	8,520	6,420	4,400	21,700	3,370	6,030
14.....	3,420	2,750	2,150	8,820	6,020	4,310	17,500	2,570	5,120
15.....	4,980	2,830	1,870	8,320	5,570	4,220	26,800	1,880	5,560
16.....	8,650	6,750	2,150	7,720	5,120	4,180	21,000	4,230	4,220
17.....	7,750	6,540	2,820	7,020	4,670	4,130	18,900	16,800	8,040
18.....	5,420	5,410	3,780	6,720	4,490	4,040	17,500	26,800	7,550
19.....	5,080	4,330	5,840	6,120	4,220	4,040	16,200	23,100	8,530
20.....	6,950	9,920	9,020	6,420	4,220	4,220	14,200	15,600	7,520
21.....	8,650	11,700	7,820	7,020	4,400	5,930	12,400	10,060	7,540
22.....	6,050	10,200	6,420	7,320	4,940	6,520	13,600	8,540	5,130
23.....	4,240	8,350	5,300	21,000	4,940	6,220	19,600	10,600	5,140
24.....	3,970	6,240	5,120	21,000	4,760	5,840	19,000	11,800	4,230
25.....	3,400	6,940	4,940	16,200	4,670	5,570	16,200	8,530	3,790
26.....									
28.....	3,080	5,310	6,720	15,400	6,120	5,300	14,200	6,520	4,240
27.....	3,400	5,510	15,000	21,700	7,620	5,120	13,600	6,530	3,390
28.....	3,810	4,780	14,100	31,600	7,520	6,820	13,600	5,130	8,540
29.....	3,150	5,310	11,800	32,400	7,420	18,200	13,000	6,020	6,020
30.....	3,070	5,940	8,220	19,600	.....	29,200	11,800	5,140	5,150
31.....	2,690	.....	7,020	14,900	.....	45,500	.....	3,380	.....
Mean....	5,210	4,880	5,880	13,400	7,420	7,840	21,500	8,700	5,230

NOTE.—Gage height affected by ice, February 13 to 19. Discharge over spillway estimated during periods of no gage height. The discharge during the period affected by ice and during estimated periods is approximate.

Monthly discharge of MOHAWK RIVER AT VISCHER FERRY DAM, for the nine months ending June 30, 1916

[Drainage area, 3,400 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF	Accuracy
	Maximum	Minimum	Mean	Per square mile		
October.....	11,400	2,690	5,210	1.53	1.76	B
November.....	11,700	2,380	4,880	1.44	1.61	B
December.....	15,000	1,870	5,880	1.73	1.99	B
January.....	32,400	6,120	13,400	3.94	4.54	B
February.....	19,600	4,220	7,420	2.19	2.35	C
March.....	45,500	4,040	7,840	2.31	2.66	D
April.....	70,000	11,800	21,500	6.33	7.03	C
May.....	26,800	1,880	8,700	2.56	2.95	C
June.....	8,540	1,880	5,230	1.54	1.72	C

In addition to the record obtained at this station by the United States Geological Survey, the concrete staff gage on the upper end of Barge canal lock No. 7 is read by this Department twice daily — at 8 A. M. and 8 P. M.— to tenths.

Daily elevation of water-surface (B. C. Datum) of MOHAWK RIVER ABOVE VISCHER FERRY DAM, for the nine months ending June 30, 1916. M. Knowles and H. V. Button, Observers

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	211.85	211.69	212.00	212.02	213.17	212.1	215.0	212.5	211.9
2.....	211.64	211.69	212.08	212.08	213.13	212.0	215.78	212.45	211.8
3.....	211.82	211.62	211.88	212.42	212.65	212.0	214.55	212.4	212.0
4.....	211.91	211.57	211.76	212.52	212.34	212.05	214.1	212.5	211.85
5.....	211.88	211.65	211.65	212.47	212.21	a	213.4	212.55	212.0
6.....	212.31	211.70	211.62	212.98	212.24	a	213.62	212.4	212.1
7.....	212.51	211.69	211.69	213.50	212.24	a	213.48	212.2	211.95
8.....	212.25	211.62	211.69	212.97	212.14	a	213.0	212.2	211.95
9.....	212.01	211.68	211.72	212.69	212.12	211.90	212.88	212.25	211.95
10.....	211.93	211.65	211.94	212.33	212.11	a	212.75	211.95	211.9
11.....	211.80	211.59	212.37	212.35	212.10	211.86	212.95	212.0	211.8
12.....	211.68	211.64	211.99	212.35	212.07	212.0	213.4	211.8	211.6
13.....	211.66	211.58	212.00	212.25	212.07	212.0	213.38	211.8	212.1
14.....	211.70	211.62	211.50	212.28	212.06	212.0	213.1	211.7	212.0
15.....	211.88	211.63	211.50	212.23	212.04	212.0	213.75	211.6	212.05
16.....	212.26	212.07	211.54	212.17	212.04	212.0	213.35	211.9	211.9
17.....	212.17	212.05	211.63	212.10	212.04	211.80	213.2	213.05	212.3
18.....	211.93	211.93	211.75	212.07	212.04	212.0	213.1	213.75	212.25
19.....	211.89	211.81	211.98	212.01	211.96	212.0	213.0	213.5	212.35
20.....	212.09	212.38	212.30	212.04	211.81	212.0	212.85	212.95	212.25
21.....	212.26	212.54	212.18	212.10	211.82	211.84	212.7	212.55	212.25
22.....	212.00	212.40	212.04	212.13	211.88	212.0	212.8	212.35	212.0
23.....	211.80	212.23	211.92	213.23	211.88	212.0	213.25	212.55	212.0
24.....	211.77	212.02	211.90	213.25	211.94	212.0	213.25	212.65	211.9
25.....	211.70	211.99	211.88	212.90	211.99	212.0	213.0	212.35	211.85
26.....	211.66	211.92	212.07	212.84	212.22	a	212.85	212.15	211.9
27.....	211.70	211.94	212.81	213.30	212.2	a	212.8	212.15	211.8
28.....	211.75	211.86	212.74	213.97	212.3	211.93	212.8	212.0	212.35
29.....	211.67	211.92	212.55	214.00	212.3	a	212.75	212.1	212.1
30.....	211.66	211.99	212.22	213.15	.....	a	212.65	212.0	212.0
31.....	211.61	.....	212.10	212.80	.....	214.27	.....	211.8	.....

a No record.

NOTE.—October 1 to February 23, inclusive, from U. S. G. S. hourly automatic gage height records; February 24, 25 and 26, March 4, 9, 11, 17, 28 and 31, from U. S. G. S. inspection observations.

## MOHAWK RIVER BELOW VISCHER FERRY DAM

This station, established May 1, 1916, is located below the Vischer Ferry dam on the Mohawk river and indicates the water-surface at the upstream end of the canalized pool formed by the Crescent dam. The vertical staff concrete gage on the lower end of Barge canal lock No. 7 is read twice daily — at 8 A. M. and 8 P. M.— to tenths.

Daily elevation of water-surface (B. C. Datum) of MOHAWK RIVER BELOW VISCHER FERRY DAM, for the nine months ending June 30, 1916. H. V. Button, Observer

DAY	May	June	DAY	May	June	DAY	May	June
1.....	185.8	184.8	11.....	185.15	185.0	21.....	185.75	185.4
2.....	185.75	184.8	12.....	185.0	184.6	22.....	185.4	185.1
3.....	185.65	185.05	13.....	184.9	184.95	23.....	185.65	185.1
4.....	185.75	184.9	14.....	184.7	184.8	24.....	185.95	184.9
5.....	185.85	185.05	15.....	184.6	184.9	25.....	185.7	184.75
6.....	185.7	185.05	16.....	184.9	184.9	26.....	185.2	184.9
7.....	185.45	185.0	17.....	186.3	185.2	27.....	185.05	184.8
8.....	185.4	185.0	18.....	187.75	185.35	28.....	185.0	185.45
9.....	185.45	185.0	19.....	187.4	185.45	29.....	185.15	184.75
10.....	185.1	184.95	20.....	186.55	185.35	30.....	184.9	185.1
						31.....	184.9	.....



## MOHAWK RIVER AT DUNSBAUGH FERRY

This station, maintained, March 12, 1898, to April 1, 1899, by the United States Deep Waterways Commission, was reestablished August 1, 1900, by the United States Geological Survey in cooperation with this Department and is now maintained by this Department. It is located at the Watervliet pumping station on the right or south bank of the Mohawk river at the site of the old Dunsbach Ferry dam, about 3 miles above the old Erie canal aqueduct at the village of Crescent, about 5.6 miles below the new Vischer Ferry dam and about 4.6 miles above the new Crescent dam.

Discharge computations were discontinued in 1911 and the old dam was partially removed in August, 1912. Two readings are made daily — at 8 A. M. and 4 P. M. — to tenths, by use of a reference point on the door-sill at the northwest corner of the pumping station.

Daily elevation of water-surface (B. C. Datum) of MOHAWK RIVER AT DUNSBAUGH FERRY, for the nine months ending June 30, 1916. Robert Wilson, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1	184.62	183.92	184.27	a	186.22	a	189.3	185.65	184.2
2	184.52	183.92	184.27	a	186.57	a	190.6	185.5	184.2
3	184.52	183.82	184.22	a	185.87	a	188.9	185.6	184.2
4	184.42	183.77	184.12	a	185.22	a	187.7	185.55	184.3
5	184.47	183.72	184.07	a	185.12	a	186.9	185.5	184.35
6	184.47	183.82	184.02	a	185.07	184.9	187.3	185.5	184.6
7	184.42	183.77	184.12	a	184.97	184.8	187.65	185.4	184.7
8	184.37	183.72	184.17	a	184.87	184.7	187.6	185.3	184.7
9	184.32	183.62	184.22	a	184.77	184.7	187.3	185.2	184.8
10	184.22	183.57	184.17	a	184.72	184.8	186.9	185.15	184.8
11	184.17	183.52	184.12	a	184.62	184.8	186.85	185.05	184.7
12	184.07	183.52	184.07	a	184.37	184.8	186.65	184.85	184.7
13	183.97	183.42	184.02	a	184.32	184.8	187.05	184.75	184.8
14	183.82	183.52	a	a	184.27	184.8	187.3	184.75	184.75
15	184.22	183.72	a	a	184.22	184.8	187.55	184.95	184.75
16	184.62	183.82	a	a	184.22	184.8	187.1	185.6	184.85
17	184.52	183.87	a	a	184.32	a	186.75	187.05	185.0
18	184.47	181.12	a	a	184.27	a	186.65	187.4	185.3
19	184.47	184.27	a	a	a	a	186.45	186.9	185.9
20	184.42	184.47	a	a	a	a	186.15	186.7	185.65
21	184.27	185.52	a	a	a	a	185.95	186.45	185.4
22	184.17	181.47	a	a	a	a	186.1	185.9	185.05
23	184.17	184.42	a	a	a	a	186.6	185.45	185.0
24	184.17	184.52	a	a	a	a	186.65	185.75	184.95
25	184.07	184.57	a	a	a	a	186.55	185.5	184.9
26	184.02	184.67	a	a	a	184.9	186.35	185.3	184.9
27	183.92	184.52	a	a	a	185.4	186.25	185.2	184.8
28	183.87	184.42	a	a	a	186.1	186.0	185.0	184.8
29	183.77	184.32	a	a	a	186.85	185.9	184.85	184.8
30	183.62	184.22	a	a	a	187.6	185.8	184.55	184.7
31	183.62	.....	a	a	.....	188.25	.....	184.3	.....

a No record, due to condition of ice in river.

## MOHAWK RIVER ABOVE DAM, COHOES

This station, established December, 1903, in coöperation with the United States Weather Bureau, but now maintained by this Department, is located above the power dam of the Cohoes Company across the Mohawk river at Cohoes. The pool above this dam extends three-quarters of a mile to the new Crescent dam. The dam has a fixed concrete crest 1,278 feet and 2 inches long at about Elev. 157.0 on which flash-boards three feet high are maintained during low stages. The summer of 1914 the fixed crest was raised from an average elevation of 154.2 and shortened 10 inches. There is also a 24-foot spillway in the gate-house. Owing to the irregular use of water for power purposes the surface above the dam fluctuates as much as 7 or 8 feet during twenty-four hours. A staff gage in two sections, the lower on the breakwater and the upper on the gate-house, on the right or south bank, is read twice daily—between 5 and 8 A. M. and between 4 and 8 P. M.—to tenths.

Daily elevation of water-surface (B. C. Datum) of MOHAWK RIVER ABOVE DAM AT COHOES, for the nine months ending June 30, 1916. James Murphy, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	157.2	157.4	157.75	158.1	158.45	158.1	160.9	158.35	157.45
2.....	157.3	157.56	158.05	158.2	159.35	158.0	161.7	158.25	157.15
3.....	157.8	157.45	157.35	158.35	158.65	157.8	160.45	158.15	157.6
4.....	157.65	157.3	157.6	158.35	158.25	157.9	159.85	158.2	157.65
5.....	157.65	157.25	157.65	158.3	158.6	157.85	159.35	158.4	157.75
6.....	158.15	157.45	157.25	158.7	158.25	157.55	159.4	158.15	157.55
7.....	158.5	157.6	157.3	159.5	158.05	157.65	159.3	158.3	157.6
8.....	158.25	157.3	157.35	159.05	158.05	157.55	159.1	158.05	157.5
9.....	158.0	157.3	157.4	158.6	157.7	157.5	159.2	158.15	157.45
10.....	157.15	157.25	157.1	157.95	157.6	157.65	159.25	158.15	157.7
11.....	157.45	157.25	157.65	158.0	157.8	157.6	158.85	157.85	157.85
12.....	157.35	157.2	157.65	158.15	158.0	157.7	159.1	158.0	157.25
13.....	157.35	157.45	157.35	158.2	157.95	157.5	159.25	157.5	157.4
14.....	157.4	157.6	157.1	158.15	157.6	157.5	159.3	157.45	157.4
15.....	157.6	157.45	156.2	158.15	157.2	157.5	159.65	157.35	157.55
16.....	158.2	157.8	155.95	158.2	157.55	157.4	159.45	158.45	157.55
17.....	158.4	157.9	157.2	158.15	157.6	157.4	159.25	158.7	157.75
18.....	157.75	157.7	157.45	157.75	157.6	157.6	159.1	159.25	157.9
19.....	157.65	157.5	157.85	157.6	157.8	157.65	159.05	159.3	158.0
20.....	157.9	158.15	158.25	157.7	157.8	157.4	158.8	159.15	157.9
21.....	158.1	158.6	158.1	157.7	157.95	157.8	158.6	158.7	158.0
22.....	157.85	158.3	158.05	157.95	157.4	157.35	158.65	158.4	157.75
23.....	157.65	158.25	157.8	159.9	157.5	157.5	158.85	158.0	157.7
24.....	157.95	157.9	157.85	159.2	157.35	157.4	158.85	158.2	157.7
25.....	157.4	158.0	158.0	158.95	157.5	157.35	158.9	158.05	157.7
26.....	157.4	157.65	158.05	159.0	158.0	157.5	158.8	157.95	157.5
27.....	157.4	157.8	158.35	159.3	158.5	157.5	158.7	157.85	157.5
28.....	157.45	157.85	158.7	160.05	158.45	157.75	158.6	158.65	157.7
29.....	157.45	157.6	158.6	160.6	158.1	158.75	158.75	157.65	157.65
30.....	157.55	157.8	158.3	159.3	.....	159.5	158.85	157.65	157.45
31.....	157.75	.....	158.0	158.75	.....	160.0	.....	157.6	.....

## MOHAWK RIVER AT WATERFORD

This station, established January 15, 1907, is located at Waterford on the most northerly branch of the Mohawk river and indicates its water-surface about 1,000 feet above its entrance to the Hudson river. As most of the flow of the Mohawk passes through the other branches, this gage also indicates closely the surface of the Hudson river at this locality, which is about  $2\frac{1}{3}$  miles above the new Federal dam at Troy. A staff gage on the back of the east approach wall below new Barge canal lock No. 2 is read twice daily — at 7 A. M. and 4 P. M. — to tenths.

Daily elevation of water-surface (B. C. Datum) of MOHAWK RIVER AT WATERFORD, for the nine months ending June 30, 1916. John W. Shook, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	16.35	17.05	18.4	19.65	21.05	20.35	24.55	19.8	17.9
2.....	15.85	17.4	18.8	19.8	21.1	20.3	26.35	19.0	17.65
3.....	16.25	17.6	18.4	19.8	20.55	20.3	24.25	18.9	17.2
4.....	17.4	17.0	18.35	19.35	20.2	20.15	23.4	19.6	17.0
5.....	17.8	16.85	18.0	19.0	20.0	20.0	22.35	19.2	17.1
6.....	18.6	17.25	17.9	19.65	19.85	19.9	22.3	18.9	17.2
7.....	19.7	17.5	17.4	20.7	19.6	19.8	22.15	18.45	17.2
8.....	19.8	16.8	18.0	21.65	19.3	19.75	22.05	18.65	17.1
9.....	18.6	17.1	18.0	21.35	19.35	19.65	22.0	18.9	17.1
10.....	17.95	17.2	17.95	19.65	19.25	19.6	21.95	18.65	17.05
11.....	17.85	16.75	18.05	18.75	19.35	19.65	21.7	18.3	17.0
12.....	17.55	16.5	17.7	18.4	19.2	19.55	21.5	18.25	18.9
13.....	17.25	16.55	18.3	18.45	19.3	19.6	21.0	18.15	17.1
14.....	16.8	16.6	17.8	18.6	19.3	19.7	21.25	17.6	17.1
15.....	17.35	16.85	16.9	18.85	19.3	19.45	21.95	17.4	17.35
16.....	19.45	17.45	17.2	18.8	19.4	18.85	21.3	17.25	17.6
17.....	18.35	18.35	17.2	18.8	19.55	18.65	20.95	17.85	17.75
18.....	17.9	18.1	17.65	18.75	19.25	18.75	21.05	20.75	17.8
19.....	18.2	18.1	19.25	18.85	18.85	18.7	20.8	21.6	18.3
20.....	18.55	18.9	19.8	18.75	18.7	18.6	20.6	20.95	18.2
21.....	19.2	19.25	19.2	18.4	18.55	18.45	20.35	20.7	18.3
22.....	19.35	18.75	18.85	18.75	18.65	18.35	20.05	20.9	18.4
23.....	18.2	18.3	18.4	20.75	18.7	18.4	20.15	20.45	18.15
24.....	17.85	18.25	18.95	20.75	18.7	18.35	21.3	20.1	17.75
25.....	17.2	18.2	19.3	20.2	18.7	18.2	21.1	19.4	17.3
26.....	17.3	17.8	20.5	20.1	19.05	17.95	20.95	18.1	17.2
27.....	17.25	17.9	21.4	20.55	19.6	18.1	20.85	17.85	17.15
28.....	17.05	17.6	21.4	22.4	20.75	18.6	20.75	17.85	17.2
29.....	17.65	17.65	21.05	23.25	20.7	20.45	20.6	17.8	17.2
30.....	17.95	18.4	20.9	21.35	.....	22.75	20.3	17.6	17.3
31.....	17.3	.....	19.6	20.6	.....	23.65	.....	17.7	.....

## NINE-MILE CREEK

## DESCRIPTION

Nine-Mile creek drains a large portion of the territory on the north side of the Mohawk between Utica and Rome, emptying into the latter stream near Oriskany.

Water for the supply of the Rome summit level of the Barge canal, will be diverted from West Canada creek above the Morgan dam at Trenton Falls through the Nine-Mile feeder to this stream, thence to the canal, which it enters three miles east of the main spillway for the Mohawk river and the east summit level guard-gate. Nine-Mile creek leaves the canal opposite its entrance over a concrete spillway with rounded crest 700 feet long at Elev. 420.0, the canal pool. At the west end of the spillway there is a Taintor gate 24 feet long with sill at Elev. 408.0.

## NINE-MILE CREEK NEAR STITTVILLE

**Location.**—At a highway bridge over Nine-Mile creek, known as Powell's bridge, about  $1\frac{3}{4}$  miles below the village of Stittville and about 3 miles from the village of Marcy.

**Records available.**—Water-surface elevations, November 4, 1905, to June 30, 1916; discharge, January 1, 1907, to June 30, 1916. A gaging station was maintained at this point by the United States Deep Waterways Commission during its survey in 1898.

**Drainage area.**—59 square miles.

**Gage.**—A standard chain gage attached to the downstream side of the bridge is read to tenths twice daily.

**Control.**—Rock. The channel is of uniform section and straight for several hundred feet above and below bridge.

**Discharge computations.**—New rating curve used, beginning October 1, 1915.

**Winter flow.**—Discharge relation seriously affected by ice. Discharge during ice period, January to March, inclusive, omitted.

**Extremes of discharge.**—Current period: Maximum recorded discharge, October 5 at 8 A. M., Elev. 488.4; estimated discharge, 4,780 second-feet. Minimum recorded discharge, on several days during October, November and December, Elev. 483.8; discharge, 9 second-feet.

1907-1916: Maximum recorded discharge, October 8, 1907, at 7 A. M., Elev. 489.4; estimated discharge, 6,000 second-feet. Minimum recorded discharge, September 12, at 6:00 P. M. to September 14, 1908, at 7:00 A. M., Elev. 482.8; discharge, 7 second-feet.

Daily elevation of water-surface (B. C. Datum) of NINE-MILE CREEK NEAR STITT-VILLE, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	485.25	484.0	484.9	485.95	485.95	484.0	488.25	483.9	485.05
2.....	485.25	484.0	484.0	485.55	486.0	484.0	488.15	483.95	485.05
3.....	485.35	484.05	484.0	485.4	485.15	484.0	486.45	484.05	485.1
4.....	486.25	484.1	483.9	485.4	485.25	484.0	486.95	485.05	485.15
5.....	488.35	484.0	483.9	485.45	485.45	484.0	486.0	485.0	485.2
6.....	486.95	484.0	483.9	485.4	485.25	484.0	486.05	484.95	485.05
7.....	485.8	484.05	483.95	485.25	485.2	484.0	486.15	484.9	485.0
8.....	484.9	484.15	483.95	485.2	485.15	484.0	486.25	485.05	484.95
9.....	484.9	484.1	483.9	485.25	485.2	484.0	486.85	485.1	485.05
10.....	484.85	484.85	483.9	485.25	485.2	484.0	485.25	485.0	485.15
11.....	484.85	484.95	484.0	485.15	485.1	484.0	485.15	484.8	485.1
12.....	484.5	484.95	484.0	485.25	485.1	484.0	485.15	484.1	484.95
13.....	484.05	484.05	484.0	485.9	485.1	484.0	485.05	484.0	484.95
14.....	484.05	484.0	484.0	485.9	485.1	484.0	485.15	483.9	485.05
15.....	484.0	484.1	484.0	485.95	485.1	484.0	485.15	483.85	485.15
16.....	484.0	484.15	484.05	486.0	485.1	484.0	485.1	483.95	485.25
17.....	484.1	484.15	484.15	485.95	485.1	484.0	485.05	487.3	485.2
18.....	484.15	484.25	484.2	484.95	485.1	484.0	484.95	487.85	485.15
19.....	484.2	484.95	484.35	485.05	485.1	484.05	484.85	486.9	485.05
20.....	484.05	485.35	484.9	485.1	485.1	484.1	484.8	485.8	485.0
21.....	484.0	485.5	484.9	485.6	484.0	484.1	484.95	485.45	484.9
22.....	483.95	485.15	484.95	488.3	484.0	484.1	484.95	485.25	484.8
23.....	484.05	485.0	484.95	487.0	484.0	484.15	484.85	485.2	484.05
24.....	484.05	484.9	484.95	485.95	484.0	484.15	484.8	485.1	484.0
25.....	484.0	484.85	485.05	484.95	484.0	484.2	484.85	485.15	483.95
26.....	484.0	484.0	485.4	485.05	484.0	485.0	484.95	485.25	483.9
27.....	484.05	484.05	485.8	485.15	484.0	485.95	485.0	485.15	483.95
28.....	484.0	483.95	485.05	485.95	484.0	487.05	485.1	485.0	484.05
29.....	483.9	483.95	484.95	486.05	484.0	487.3	484.8	485.0	484.1
30.....	484.95	484.85	485.0	485.95	.....	488.15	484.85	485.0	484.15
31.....	484.1	.....	485.0	486.0	.....	488.35	.....	484.95	.....

NOTE.—Discharge relation materially affected by ice, January 1, to March 31, inclusive.

Daily discharge, in second-feet, of NINE-MILE CREEK NEAR STITTVILLE, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1	539	31	340				4,500	18	419
2	539	31	31				4,299	24	419
3	605	39	31				1,720	39	448
4	1,490	47	18				2,390	489	477
5	4,700	31	18				1,210	392	507
6									
7	2,390	81	18				1,270	365	479
8	1,010	39	24				1,370	340	392
9	340	57	24				1,490	419	365
10	340	47	18				1,060	448	419
11	314	314	18				539	392	477
12									
13	314	365	31				477	299	448
14	158	365	31				477	47	365
15	39	39	31				449	31	365
16	39	31	31				477	18	419
17	31	47	31				477	13	477
18									
19	31	57	39				448	24	539
20	47	57	57				449	2,999	897
21	57	79	68				365	3,800	477
22	68	365	106				314	2,340	449
23	39	605	340				289	1,010	392
24									
25	31	718	340				365	676	340
26	24	477	365				365	539	299
27	39	392	365				314	507	39
28	39	340	865				289	448	31
29	31	314	419				314	477	24
30									
31	31	31	639				365	539	18
Mean	39	39	1,010				392	477	24
	31	24	419				448	399	39
	18	24	365				289	292	47
	39	314	392				314	365	57
	47		392						
Mean	434	178	206				916	597	322

NOTE.—January to March, discharge not computed, due to ice conditions. New rating curve used, beginning October 1.

Monthly discharge of NINE-MILE CREEK NEAR STITTVILLE, for the nine months ending June 30, 1916

[Drainage area, 59 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF Depth in inches on drainage area.
	Maximum	Minimum	Mean	Per square mile	
October	4,700	18	434	7.356	8.48
November	718	24	178	3.017	3.36
December	1,010	18	206	3.492	4.08
January					
February					
March					
April	4,500	289	916	15.525	17.31
May	3,800	13	597	10.119	11.64
June	539	18	322	5.458	6.00

**WEST CANADA CREEK****DESCRIPTION OF BASIN**

West Canada creek rises in West Canada lake, in southwest-central Hamilton county, and flows southwestward, then south-eastward into the Mohawk at Herkimer, N. Y. The drainage area, approximately 584 square miles, is shown on the Utica, Little Falls, Remsen, Wilmurt, Old Forge and West Canada Lakes sheets, United States Geological Survey topographic maps.

There are about fifty small lakes and a few undrained ponds in the watershed of the stream. Most of these are situated near the headwater, the largest single water-surface, exclusive of the Hinckley reservoir, being Honnedaga lake, 1.4 square miles in extent. There is also a small amount of controllable storage in reservoirs formed by three dams. Swamps and marshes are numerous in the region of the headwaters, usually adjoining lakes and tributaries and having an extent of one-half square mile or less each. At Trenton Falls there is an important plant of the Utica Gas & Electric Co.

Much of the region above the Hinckley reservoir is timber-covered. There are extensive sand areas in the central and upper drainage basins. The soil of the upper watershed is underlaid by granitic gneiss usually at or near the surface, excepting in alluvial valleys. From a point just above Twin Rock bridge (now submerged by the Hinckley reservoir) and extending downstream beyond Trenton Falls the underlying geological formation is Trenton limestone.

Compacted snow accumulates in the woodlands in winter, often to a depth of three or four feet, and representing an inch of water for each five or six inches of snow. This melts slowly, feeding the stream in March and April, which months may show a run-off greatly exceeding the precipitation.

At Hinckley there has been constructed and placed in operation (January, 1915) by the State of New York a storage reservoir of 3,445,000,000 cubic feet capacity for the supply of the Rome summit level of the Barge canal. The stored water will be passed down West Canada creek and diverted by a new dam on the site of the old Morgan dam at Trenton Falls, through a feeder canal and Nine-Mile creek to the Barge canal.

For table of drainage areas of West Canada creek, see page 326.

## HINCKLEY RESERVOIR

This station is on West Canada creek at the dam of the Hinckley reservoir, a part of the water-supply system for the Barge canal. The dam, about 1,600 feet above the highway bridge at Hinckley, consists of earth dykes with concrete core and a concrete spillway with an ogee crest 400 feet long at Elev. 1,225.0. At the north end of the spillway are four 60-inch discharge pipes with center of outlets at Elev. 1,169.5. At the south end are two 42-inch pipes with center of inlets at Elev. 1,164.25 for the use of the Consolidated Water Co., which diverts water at this point to Utica. The reservoir has a capacity of 3,445,000,000 cubic feet below, and a water-surface area of about 4.46 square miles at crest elevation. While small amounts of water were impounded during construction as early as April, 1914, the reservoir was first used for regulative purposes in January, 1915. A concrete staff gage on the south face of the north gate-house indicates reservoir surface just above spillway.

Daily elevation of water-surface of HINCKLEY RESERVOIR AT HINCKLEY DAM, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	1,224.0	1,223.5	1,225.9	a	1,221.65	1,204.0	1,193.0	1,226.2	1,225.7
2.....	1,224.0	1,223.6	1,225.9	a	1,222.6	1,203.4	1,197.0	1,226.2	1,225.7
3.....	1,224.0	1,223.8	1,225.8	a	1,223.0	1,202.6	1,201.0	1,226.2	1,225.6
4.....	1,221.0	1,223.9	1,225.7	a	1,223.0	1,201.8	1,204.0	1,226.2	1,225.7
5.....	1,224.2	1,224.0	1,225.6	a	1,222.7	1,200.9	1,205.5	1,226.1	1,225.7
6.....	1,226.1	1,224.25	1,225.6	a	1,222.3	1,200.1	1,206.0	1,226.0	1,225.7
7.....	1,226.0	1,224.3	1,225.6	a	1,221.85	1,199.2	1,208.5	1,225.7	1,225.7
8.....	1,225.0	1,224.4	1,225.6	a	1,221.2	1,198.2	1,207.0	1,225.6	1,225.7
9.....	1,224.6	1,224.45	1,225.6	a	1,220.5	1,197.3	1,206.5	1,225.5	1,225.7
10.....	1,223.9	1,224.5	1,225.5	a	1,219.8	1,196.5	1,208.0	1,225.4	1,225.6
11.....	1,224.0	1,224.55	1,225.4	a	1,219.1	a	1,205.5	1,225.3	1,225.5
12.....	1,224.0	1,224.55	1,225.2	a	1,218.2	a	1,205.5	1,224.9	1,225.5
13.....	1,224.0	1,224.55	1,225.0	a	1,217.2	a	1,206.5	1,225.1	1,225.5
14.....	1,223.9	1,224.6	1,224.9	a	1,216.5	a	1,207.0	1,225.3	1,225.5
15.....	1,224.2	1,224.8	1,224.7	1,219.0	1,215.6	1,191.5	1,208.0	1,225.5	1,225.5
16.....	1,224.2	1,225.2	1,224.5	1,218.5	1,214.6	1,190.6	1,209.8	1,225.8	1,225.7
17.....	1,223.8	1,225.6	1,224.35	1,217.9	1,213.7	1,189.7	1,211.3	1,226.5	1,225.9
18.....	1,223.8	1,225.5	1,224.3	a	1,212.8	1,188.7	1,214.0	1,227.9	1,226.1
19.....	1,223.8	1,225.5	1,224.5	1,216.4	1,211.9	1,187.5	1,216.0	1,227.3	1,226.1
20.....	1,224.0	1,225.8	1,224.7	1,215.6	1,210.9	1,186.6	1,217.2	1,226.8	1,226.1
21.....	1,223.7	1,226.2	1,224.8	a	1,209.8	1,185.6	1,218.2	1,226.2	1,226.1
22.....	1,223.8	1,226.2	1,224.8	1,214.0	1,208.3	1,184.5	1,220.2	1,225.8	1,225.95
23.....	1,223.75	1,226.0	1,224.85	1,214.1	1,207.8	1,183.5	1,222.7	1,226.0	1,225.8
24.....	1,223.5	1,225.9	1,224.9	1,215.1	1,206.8	1,182.5	1,224.2	1,226.3	1,225.7
25.....	1,223.45	1,225.7	1,224.8	1,215.8	1,205.8	1,181.7	1,225.4	1,226.2	1,225.7
26.....	1,223.4	1,225.7	1,225.2	1,216.1	1,205.2	1,181.0	1,226.3	1,226.0	1,225.7
27.....	1,223.55	1,225.7	1,225.5	1,216.1	1,204.9	1,181.0	1,226.6	1,225.8	1,225.65
28.....	1,223.6	1,225.7	1,225.8	1,216.6	1,204.9	1,181.0	1,226.4	1,225.7	1,225.7
29.....	1,223.6	1,225.9	1,225.9	1,219.0	1,204.4	1,183.0	1,226.3	1,225.7	1,225.7
30.....	1,223.6	1,225.9	1,225.4	1,220.6	a	1,186.0	1,226.3	1,225.7	1,225.7
31.....	1,223.55	a	1,224.9	1,221.65	a	1,183.0	a	1,225.7	a



**WEST CANADA CREEK AT POWER DAM, TRENTON FALLS**

**Location.**—At the power dam and plant of the Utica Gas and Electric Company at Trenton Falls.

**Records available.**—November 1, 1905, to June 30, 1916.

**Drainage area.**—376 square miles (from U. S. G. S. topographic maps).

**Gage.**—Vertical chain gage on upstream face of dam, read twice daily — at 8 A. M. and 5 P. M. Owing to irregular fluctuation water-surface elevations are not published.

**Control.**—Masonry crest of concrete dam 97.9 feet long at Elev. 1,019.12\* and by-pass cut through rock with crest 163.4 feet long, two feet below that of dam but provided with flash-boards to dam crest elevation for use during low-water periods, together with wheels in power-plant operating under a head of approximately 270 feet.

**Discharge computations.**—Discharge over the two spillways computed by weir formula using coefficients derived from United States Geological Survey experiments and the assumption that the water-surface varies uniformly between the two daily readings as a basis for estimating duration and head of actual overflow. Flow through wheels estimated from average kilowatts developed per machine-hour during the twenty-four hours for which the total kilowatts developed. The number of machines operated and length of runs are furnished by the company. The relation is based on measurements made by the company over weirs in the tail-race.

**Extremes of discharge.**—Current period: Maximum recorded discharge, May 18, 6,470 second-feet. Minimum recorded discharge, June 11, 216 second-feet.

1905–1916: Maximum recorded discharge, March 28, 1913, 25,700 second-feet. Minimum recorded discharge, September 20 and 27, 1908, 0 second-feet when the pond was low and the wheels shut down.

**Accuracy.**—The kilowatts used in estimating the flow through the wheels is the total developed during 24 hours. The pondage is very limited and the surface fluctuates often as much as 10 feet during 24 hours in the low-water season. In connection with the calculated discharge at Trenton Falls it may be stated

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\*Incorrectly printed as 1,009.12 in Report of State Engineer for 1915, Vol. II, page 319

that there are a variety of conditions which tend to limit the accuracy obtainable.

**Diversion.**—The Consolidated Water Company of Utica diverts water at Hinckley for the supply of the city of Utica.

**Regulation.**—By new Barge canal storage reservoir at Hinckley, capacity 3,445,000,000 cubic feet, about 4 miles upstream. Small amounts of water were impounded during construction as early as April, 1914, but this reservoir was first used for regulative purposes in January, 1915. There are several small reservoirs further up the stream.

**Coöperation.**—Maintained in coöperation with the United States Weather Bureau.

Daily discharge, in second-feet, of WEST CANADA CREEK AT POWER DAM, TRENTON FALLS, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	370	705	999	1,540	1,480	1,250	1,180	3,260	349
2.....	565	364	919	3,210	1,489	1,250	1,550	3,120	346
3.....	766	302	712	1,440	1,480	1,130	1,450	3,290	398
4.....	483	322	572	1,460	1,480	1,110	1,540	2,870	481
5.....	1,910	402	533	1,480	1,470	1,070	1,600	2,870	458
6.....	3,880	468	486	1,480	1,500	1,110	1,600	1,820	401
7.....	3,270	354	477	1,480	1,478	1,130	1,600	1,820	363
8.....	2,810	369	450	1,460	1,460	1,020	1,600	1,810	327
9.....	2,160	346	477	1,550	1,480	1,020	1,970	1,770	322
10.....	1,120	370	425	1,450	1,480	1,020	1,610	1,600	293
11.....	499	376	511	1,480	1,480	1,000	1,600	1,540	216
12.....	587	350	747	1,460	1,470	1,200	1,600	870	295
13.....	628	552	581	1,480	1,440	991	1,600	258	409
14.....	521	350	510	1,480	1,460	1,020	1,660	246	519
15.....	1,170	868	509	1,440	1,480	1,020	1,690	376	608
16.....	1,800	457	533	1,620	1,480	1,020	1,850	561	652
17.....	1,350	689	532	1,450	1,480	1,020	1,570	2,870	1,170
18.....	871	672	553	1,420	1,480	1,010	1,600	6,470	1,540
19.....	1,460	796	688	1,420	1,470	1,080	1,600	4,330	1,380
20.....	2,190	863	514	1,420	1,390	871	1,600	2,850	1,420
21.....	1,630	1,389	528	1,420	1,400	776	1,600	1,870	1,810
22.....	920	1,460	567	1,420	1,370	777	1,590	982	1,040
23.....	1,000	1,250	566	1,390	1,360	697	1,950	1,010	864
24.....	998	1,030	595	1,390	1,360	698	1,620	1,410	718
25.....	644	732	565	1,360	1,250	592	2,110	1,130	683
26.....	546	767	695	1,360	1,250	677	3,730	831	470
27.....	641	715	868	1,360	1,210	602	4,170	620	515
28.....	650	1,330	1,510	1,370	1,250	767	3,910	538	662
29.....	766	974	1,620	1,350	1,370	849	3,520	370	556
30.....	816	1,020	1,660	1,560	.....	1,030	3,210	1,250	494
31.....	851	.....	1,540	1,470	.....	1,120	.....	419	.....
Mean....	1,222	663	725	1,505	1,423	965	1,983	1,775	643

**Monthly discharge of WEST CANADA CREEK AT POWER DAM, TRENTON FALLS, for the nine months ending June 30, 1916**

[Drainage area, 376 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF
	Maximum	Minimum	Mean	Per square mile	Depth in inches on drainage area
October.....	3,880	370	1,222	3.25	3.75
November.....	1,480	302	603	1.78	1.96
December.....	1,660	425	725	1.93	2.22
January.....	3,210	1,350	1,505	4.00	4.61
February.....	1,500	1,210	1,423	3.78	4.08
March.....	1,250	592	965	2.57	2.96
April.....	4,170	1,180	1,983	5.27	5.88
May.....	6,470	246	1,775	4.72	5.44
June.....	1,540	216	643	1.71	1.91

**WEST CANADA CREEK AT MORGAN DAM, TRENTON FALLS**

This station was established February 8, 1904, by this Department and is maintained in cooperation with the United States Weather Bureau. A staff gage is located on the right bank of the stream about one hundred feet above the site of the old Morgan dam. A new dam has been constructed by the State 60 feet above the old dam to divert water through the Nine-Mile creek feeder for the supply of the Rome summit level of the Barge canal. The crest, at Elev. 753.25, has an ogee type section and a length of about 147 feet. There is a Taintor gate with a clear span of 30 feet, sill at Elev. 744.0 and top when closed at Elev. 756.5. The gage is read twice daily—at 7 A. M. and 6 P. M.—to tenths.

Daily elevation of water-surface (B. C. Datum) of WEST CANADA CREEK ABOVE MORGAN DAM, TRENTON FALLS, for the nine months ending June 30, 1916. C. W. Young, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	749.7	750.15	750.35	751.45	751.35	750.95	750.95	754.9	750.25
2.....	749.8	750.1	750.35	751.45	751.35	750.95	751.05	754.2	750.25
3.....	749.95	750.05	750.35	751.45	751.35	750.85	751.15	754.0	750.25
4.....	750.15	749.6	750.35	751.45	751.35	750.85	751.2	754.05	750.25
5.....	750.8	749.55	750.25	751.45	751.35	750.85	751.25	754.0	750.25
6.....	753.45	749.55	750.25	751.45	751.35	750.85	751.25	753.75	750.15
7.....	753.15	749.55	750.2	751.45	751.35	750.85	751.25	753.1	750.1
8.....	752.85	749.55	750.15	751.45	751.35	750.85	751.25	753.05	749.85
9.....	752.55	749.55	750.15	751.45	751.35	750.85	751.25	753.05	749.75
10.....	752.45	749.25	750.15	751.45	751.35	750.85	751.15	752.85	749.75

Daily elevation of water-surface (B. C. Datum) of WEST CANADA CREEK ABOVE MORGAN DAM, TRENTON FALLS, for the nine months ending June 30, 1916 —  
Continued

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
11. ....	749.35	749.25	750.15	751.45	751.35	750.85	751.15	752.8	749.75
12. ....	749.35	749.25	750.25	751.45	751.35	750.85	751.15	751.5	749.75
13. ....	749.35	749.25	750.25	751.45	751.35	750.85	751.15	750.35	749.75
14. ....	749.35	749.25	750.25	751.45	751.35	750.85	751.15	750.35	749.95
15. ....	750.25	749.25	750.25	751.45	751.35	750.85	751.25	750.35	750.05
16. ....	750.55	749.25	750.25	751.45	751.35	750.85	751.25	754.95	750.6
17. ....	750.7	749.25	750.25	751.45	751.35	750.85	751.25	754.95	750.85
18. ....	750.5	749.45	750.25	751.45	751.35	750.85	751.25	756.05	751.15
19. ....	750.4	750.4	750.25	751.45	751.35	750.85	751.35	755.15	751.15
20. ....	750.25	750.65	750.25	751.45	751.35	750.6	751.45	754.15	750.05
21. ....	751.1	751.3	750.25	751.45	751.35	750.55	751.45	753.25	751.0
22. ....	750.4	751.45	750.25	751.45	751.35	750.55	751.45	751.15	750.65
23. ....	750.45	751.05	750.25	751.35	751.35	750.45	751.45	751.35	750.4
24. ....	750.45	750.85	750.25	751.35	751.35	750.35	751.75	753.2	750.3
25. ....	750.35	750.6	750.25	751.35	751.35	750.35	752.5	751.45	750.3
26. ....	750.35	750.45	750.45	751.35	751.25	750.25	753.1	750.95	750.25
27. ....	750.35	750.45	750.7	751.35	751.25	750.25	753.95	750.8	750.0
28. ....	750.35	750.35	750.5	751.35	751.1	750.35	754.05	750.45	749.95
29. ....	750.35	750.35	750.95	751.35	751.0	750.45	753.95	750.35	749.15
30. ....	750.35	750.35	751.05	751.35	.....	750.7	753.75	750.35	749.65
31. ....	750.35	.....	751.0	751.35	.....	750.85	.....	750.25	.....

#### WEST CANADA CREEK AT KAST BRIDGE

**Location.**—At the highway bridge over West Canada creek, known as Kast bridge, opposite the station of that name on the Herkimer and Remsen branch of the N. Y. C. & H. R. R. R., about  $3\frac{1}{2}$  miles above the village of Herkimer.

**Records available.**—Water-surface elevations, May 15, 1904, to June 30, 1916; discharge, January 1, 1907, to June 30, 1916.

**Drainage area.**—575 square miles.

**Gage.**—The gage is of the weight-and-reel type and is secured to the upstream side of the bridge. It is read twice daily — at 8 A. M. and 4 P. M. — to hundredths.

**Control.**—Gravel and cobble rift about 1,500 feet below the gage. The bed of the stream is permanent with a fairly straight uniform channel from the control to quite a distance above the gage.

**Winter flow.**—Discharge relation affected by ice conditions. Discharge during January to March inclusive omitted.

**Extremes of discharge.**—Current period: Maximum recorded discharge, May 18, at 4 P. M., elevation 447.36; discharge, 9,610 second-feet. Minimum recorded discharge, May 14, at 4 P. M., elevation 442.63; discharge, 423 second-feet.

1907-1916: Maximum recorded discharge, March 26, 1913, at 8 A. M., elevation 451.06; estimated discharge, 23,300 second-feet. Minimum recorded discharge, September 12, 1913, at 8 A. M., elevation 441.64; discharge, 80 second-feet.

**Diversion.**—The Consolidated Water Company of Utica diverts water at Hinckley for the supply of the city of Utica.

**Regulation.**—Seasonal by Barge canal storage reservoir at Hinckley, and daily by power-plant pondage at Trenton Falls.

Daily elevation of water-surface (B. C. Datum) of WEST CANADA CREEK AT EAST BRIDGE, NEAR HERKIMER, for the nine months ending June 30, 1916. Lloyd Kast, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	442.94	443.25	443.82	444.30	445.00	444.02	445.60	445.38	443.36
2.....	443.16	442.80	443.67	444.59	444.38	443.82	445.77	445.42	443.22
3.....	443.55	442.89	443.50	444.55	444.35	443.92	445.34	445.26	443.54
4.....	443.14	442.91	443.36	444.31	444.26	443.84	444.92	445.42	443.62
5.....	444.23	443.41	443.14	444.43	444.25	443.80	444.60	445.20	443.56
6.....	445.56	443.14	443.12	445.20	444.24	443.87	445.02	445.13	443.37
7.....	445.54	442.93	443.17	444.69	444.23	443.82	444.69	444.92	443.28
8.....	444.84	442.96	443.18	444.32	444.58	443.81	444.52	444.68	443.06
9.....	444.61	443.99	443.11	444.30	444.22	443.79	444.56	444.53	443.20
10.....	444.00	442.94	442.93	444.36	444.21	443.74	444.52	444.50	443.12
11.....	442.94	442.91	443.30	444.20	444.12	443.80	444.71	444.33	443.02
12.....	443.24	442.96	443.09	444.15	444.16	443.71	445.31	444.02	443.02
13.....	443.20	442.92	443.15	444.14	444.10	443.74	444.75	443.07	443.00
14.....	443.15	442.88	443.14	444.47	444.12	443.72	445.16	442.72	443.22
15.....	444.61	443.86	443.18	444.53	444.06	443.55	444.88	443.03	443.28
16.....	444.42	443.46	443.24	444.21	444.18	443.51	444.90	443.62	443.64
17.....	444.31	443.56	443.24	444.18	444.16	443.49	444.92	446.14	444.16
18.....	443.56	443.58	444.04	444.01	444.18	443.39	444.80	447.26	444.18
19.....	444.50	444.03	443.90	444.08	443.75	443.47	444.58	446.62	444.38
20.....	444.80	444.34	443.58	444.25	444.01	443.48	444.60	445.62	444.30
21.....	444.78	444.56	443.47	444.26	444.27	443.47	444.60	445.30	444.14
22.....	443.65	441.36	443.35	445.56	444.04	443.89	444.81	444.50	443.95
23.....	443.77	444.18	443.32	445.08	444.05	443.21	444.85	445.56	443.60
24.....	443.69	443.94	443.49	444.56	444.03	443.24	444.68	444.80	443.38
25.....	443.33	443.60	443.42	444.40	444.10	443.34	444.66	444.39	443.30
26.....	443.18	443.64	444.19	444.88	444.68	443.24	445.54	444.14	443.24
27.....	443.36	443.62	444.19	445.55	444.36	443.53	445.90	443.81	443.05
28.....	443.42	443.42	444.64	446.38	444.03	444.48	445.73	443.66	443.54
29.....	443.28	443.73	444.26	444.60	444.14	444.99	445.58	443.43	443.26
30.....	443.42	443.91	444.39	444.33	.....	445.15	445.41	443.46	443.08
31.....	443.30	.....	444.22	444.46	.....	445.56	.....	443.42	.....

Daily discharge, in second-feet, of WEST CANADA CREEK AT EAST BRIDGE, NEAR HERKIMER, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	621	847	1,450	2,140	3,560	1,730	5,040	4,500	952
2.....	792	518	1,276	2,650	2,290	1,450	5,450	4,600	886
3.....	1,140	584	1,100	2,600	2,230	1,590	4,400	4,200	1,130
4.....	767	599	952	2,160	2,070	1,490	3,370	4,690	1,220
5.....	2,200	1,000	767	2,380	2,050	1,420	2,890	4,060	1,150
6.....	4,940	767	752	4,060	2,040	1,530	3,610	3,899	963
7.....	4,900	614	789	2,969	2,020	1,450	2,950	3,370	871
8.....	3,180	636	797	2,180	2,060	1,430	2,530	2,840	708
9.....	2,710	658	745	2,140	2,010	1,410	2,620	2,560	811
10.....	1,700	621	614	2,250	1,990	1,340	2,550	2,510	762
11.....	621	599	811	1,960	1,870	1,420	2,900	2,200	660
12.....	840	636	730	1,910	1,920	1,310	4,330	1,730	680
13.....	811	698	774	1,900	1,840	1,340	2,970	716	645
14.....	774	577	767	2,460	1,870	1,320	3,960	465	826
15.....	2,710	1,500	797	2,560	1,780	1,140	3,290	697	871
16.....	2,360	1,050	840	1,900	1,950	1,100	3,320	1,220	1,240
17.....	2,160	1,150	840	1,950	1,920	1,090	3,370	6,370	1,920
18.....	1,150	1,180	1,760	1,760	1,950	983	3,090	9,310	1,950
19.....	2,510	1,740	1,560	1,810	1,350	1,060	2,660	7,530	2,290
20.....	3,090	2,220	1,180	2,050	1,710	1,030	2,090	6,090	2,140
21.....	3,640	2,620	1,060	2,020	2,080	1,080	2,690	4,200	1,900
22.....	1,250	2,250	942	4,910	1,760	983	3,170	2,510	1,630
23.....	1,340	1,950	911	3,760	1,770	818	3,210	4,940	1,260
24.....	1,297	1,620	1,080	2,620	1,760	840	2,840	3,690	673
25.....	920	1,200	1,010	2,330	1,840	932	2,800	2,310	891
26.....	797	1,240	1,970	3,280	2,840	840	4,900	1,900	840
27.....	952	1,220	1,970	4,920	2,290	1,120	5,700	1,480	701
28.....	1,010	1,010	2,770	6,910	1,740	2,470	5,350	1,260	1,130
29.....	973	1,330	2,070	2,690	1,900	3,540	4,990	1,060	865
30.....	1,010	1,570	2,310	2,200	.....	3,930	4,650	1,050	723
31.....	891	.....	2,610	2,440	.....	4,940	.....	1,010	.....
Mean....	1,725	1,137	1,206	2,709	2,034	1,553	3,600	3,156	1,116

Monthly discharge of WEST CANADA CREEK AT EAST BRIDGE, NEAR HERKIMER, for the nine months ending June 30, 1916

(Drainage area, 575 square miles)

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF
	Maximum	Minimum	Mean	Per square mile	
October.....	4,940	621	1,725	3,000	3.46
November.....	2,620	518	1,137	1,977	2.21
December.....	2,770	614	1,203	2,097	2.42
January.....	6,910	1,760	2,709	4,711	5.43
February.....	3,690	1,350	2,034	3,637	3.91
March.....	4,940	818	1,553	2,701	3.11
April.....	5,750	2,550	3,606	6,271	7.00
May.....	9,310	465	3,136	5,454	6.29
June.....	2,290	666	1,116	1,941	2.17

## EAST CANADA CREEK

## DESCRIPTION

East Canada creek rises in Hamilton county and flows southward between Herkimer and Fulton counties, joining the Mohawk at East Creek. In a general way its drainage basin is similar to that of West Canada creek, although its flow is less sustained and regular.

Spruce creek, the principal tributary of East Canada creek, enters 1 mile above Dolgeville and drains an area of 50 square miles. Water is diverted from this creek and from Beaver creek, one of the tributaries at Diamond Hill, and is carried to Little Falls through a cast-iron conduit 9 miles long.

For table of drainage areas of East Canada creek, see page 325.

## EAST CANADA CREEK AT DOLGEVILLE

A gaging station on this stream was established for the U. S. Board of Engineers on Deep Waterways in 1898. It was maintained by the U. S. Geological Survey in coöperation with this Department from 1900 to June, 1907, inclusive, when it was taken over by this Department.

**Location.**—At the power-plant of the Herkimer County Light and Power Company at High falls about one mile below the village of Dolgeville, and about 7 miles above the mouth of the stream.

**Records available.**—September 23, 1898, to June 30, 1916.

**Drainage area.**—257 square miles.

**Gage.**—Above dam, a reference point on the right-hand abutment; lower gage, a staff secured to the side wall of the tail-race below the power-plant. Readings twice daily — at 7 A. M. and 6 P. M.

**Control.**—A masonry dam about 19 feet high with fixed flat crest 6 feet wide sloping downward upstream about one foot in six, 190.25 feet long, upon which flash-boards are maintained during ordinary stages of the stream, together with turbines in power-plant.

**Discharge computations.**—Discharge over dam computed from curve based on United States Geological Survey experiments at Cornell University, with a full-sized model of the crest. Estimated flow through the turbines based on ratings by current-meter measurements made in the tail-race of the power-plant.

**Winter flow.**—Very slightly affected by ice as the crest is kept clean during the winter months.

**Extremes of discharge.**—Current period: Maximum discharge recorded, April 22 at 6 P. M., 3,940 second-feet. Minimum discharge recorded, November 14 at 7 A. M., 189 second-feet.

1898–1916. Maximum discharge recorded, March 26, 1913, at 9 P. M., approximately 14,500 second-feet. Minimum discharge recorded, August 21, 1910, 0 second-feet. No water was used for 19 hours while the pond was filling.

**Diversion.**—From Spruce and Beaver creeks at Diamond Hill for water-supply of Little Falls; from Cold brook for water-supply of Dolgeville. The run-off given below is that passing the station and is exclusive of the above diversions.

Daily discharge, in second-feet, of EAST CANADA CREEK AT DOLGEVILLE, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	239	472	624	246	1,780	454	2,460	1,220	348
2.....	423	426	579	269	1,400	388	2,470	559	273
3.....	590	450	534	468	970	389	2,350	613	304
4.....	519	451	328	439	728	339	2,000	957	403
5.....	870	473	212	405	522	395	1,700	894	325
6.....	1,230	383	328	1,120	454	301	1,690	833	354
7.....	1,380	200	325	953	381	284	1,480	654	301
8.....	1,090	307	333	495	484	392	990	709	397
9.....	449	385	316	350	481	371	896	700	443
10.....	433	335	286	489	502	428	1,050	500	335
11.....	351	380	193	522	431	446	1,290	528	245
12.....	321	330	295	457	381	489	1,710	404	304
13.....	357	272	215	459	341	373	1,750	435	249
14.....	376	191	203	500	488	390	1,680	305	381
15.....	535	437	194	449	320	383	1,900	419	326
16.....	314	760	231	215	369	383	2,490	619	712
17.....	235	751	231	383	460	384	3,110	2,610	1,150
18.....	513	656	719	388	430	329	3,450	3,230	767
19.....	603	683	774	410	272	397	2,830	1,860	850
20.....	939	913	770	454	237	318	2,500	1,190	837
21.....	909	849	679	470	329	322	2,360	919	653
22.....	622	815	573	453	385	308	3,590	2,680	545
23.....	403	761	431	702	401	301	2,970	1,280	376
24.....	347	658	345	963	400	285	2,630	1,420	291
25.....	272	480	377	1,030	417	301	2,440	1,290	285
26.....	360	478	768	1,070	639	361	2,560	753	339
27.....	532	390	723	1,320	441	404	2,590	405	298
28.....	534	351	807	1,680	517	1,040	2,470	650	379
29.....	527	772	684	1,260	377	1,350	2,070	518	323
30.....	372	693	430	1,160	.....	1,650	1,970	297	272
31.....	197	.....	420	1,730	.....	1,960	.....	411	.....
Mean....	548	521	447	690	529	514	2,187	969	442



Monthly discharge of EAST CANADA CREEK AT DOLGEVILLE, for the nine months ending June 30, 1916.

[Drainage area, 257 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF
	Maximum	Minimum	Mean	Per square mile	Depth in inches on drainage area
October.....	1,380	197	548	2.132	2.43
November.....	913	181	521	2.027	2.25
December.....	807	193	447	1.739	2.00
January.....	1,730	315	600	2.685	3.10
February.....	1,780	237	529	2.058	2.22
March.....	1,960	284	514	2.000	2.31
April.....	3,590	896	2,187	8.510	9.50
May.....	3,220	297	969	3.770	4.35
June.....	1,150	245	442	1.720	1.92

## SCHOHARIE CREEK

### DESCRIPTION OF BASIN

The source of Schoharie creek is about two miles east of Tannersville, at an elevation of 1,940 feet. The source is within about four miles of the easterly escarpment of the Catskill plateau. The stream valley is broad and the slope moderate throughout the upper regions. A small area, which apparently was formerly tributary to Schoharie creek, has been cut off by erosion and has thus become tributary to Kaaterskill. Nearly the entire drainage basin is irregular and precipitous. It is extensively covered with second-growth forests.

The basin of Schoharie creek is largely overlaid by slaty rocks, into which water percolates only to a slight depth. The valley soil is largely thin plastic clay, formed by disintegration of the native rocks. Passing from the headwaters toward the mouth, Schoharie creek crosses successively the Devonian sedimentary rocks, chiefly of the Catskill, Oneonta, Ithaca and Hamilton formations. All of these may be considered fairly impervious and free from fissures. It then crosses belts of Silurian formations, including Helderberg, Salina, Niagara and Medina sandstone and limestone. These rocks are underlaid by impervious Hudson river shales, but are themselves permeable, yielding numerous springs at the lower partings.

It is the intention of the Board of Water Supply of the city of New York to build a dam on the Schoharie creek at Gilboa

for an additional water-supply. A tunnel about 18 miles long, beginning at a point on the creek near the county line north of Prattsville, will carry the water to the Esopus creek in the vicinity of Allaben, whence it will follow the natural course of the Esopus creek until it empties into the Ashokan reservoir. The area diverted will be approximately 314 square miles.

The entire drainage basin of 930\* square miles is shown on the topographic maps of the United States Geological Survey. For area at different points along the stream, see table on page 324.

#### **SCHOHARIE CREEK AT PRATTSVILLE**

**Location.**—On upstream side of highway bridge at Prattsville. Automatic gage is located on downstream side, left bank. Pipe gage on right bank below bridge has been discontinued.

**Records available.**—January 1, 1903, to June 30, 1916.

**Drainage area.**—236 square miles planimetered on U. S. G. S. topographic maps. 1907–1912, inclusive, area considered 240 square miles, based on published records.

**Gage.**—Standard Board of Water Supply chain gage, and Friez automatic water-stage recorder. Gage is read twice daily.

**Control.**—Gravel bed, some small boulders. Affected by extreme freshets. Clear span, 187.5 feet. During low stages, dead water from Sta. 60 upward. Channel above bridge straight for about 300 feet. Channel below bridge straight for about 600 feet, with tendency to bifurcate at this point, where wading measurements are made. Both banks high, clean, and not liable to overflow except in extreme freshets.

**Discharge measurements.**—From highway bridge; at low stages by wading 600 feet downstream from bridge.

**Winter flow.**—Discharge relation seriously affected by ice conditions. Flow determined by meter measurements and climatological data.

**Extremes of discharge.**—Calendar year 1916: Maximum stage recorded, 12.38 feet on February 25 at 5 p. m.; discharge, 14,300 second-feet. Minimum stage recorded, 4.68 feet on September 14; discharge, 53 second-feet.

\* The 930 square miles used above is the result of a joint determination of drainage areas, based on independent computations by the engineers of the Board of Water Supply of the city of New York and of the Department of State Engineer, and replaces the figure 909 previously used in the reports of the State Engineer.

1907-1916: Maximum stage recorded, 13.10 feet on March 27, 1913, at 4:45 P. M.; discharge, 16,500 second-feet. Minimum stage recorded, 4.13 feet on August 3, 1913; discharge, 5 second-feet.

**Accuracy.**—Discharge rating curve fairly well defined. Beginning October 1, 1915, discharge is computed from record of automatic water-stage recorder.

**Coöperation.**—Maintained by Board of Water Supply of the city of New York.

Climatological observations are made at this station.

**Emendation.**—1915 Report, Vol. II, page 331: Daily discharge August 27, 1915, should read 752, not 152 second-feet; the year, minimum 9, not 40 second-feet.

Daily discharge, in second-feet, of SCHORIE CREEK AT PRATTSVILLE, for the nine months ending June 30, 1916. Mary E. Stickles, Observer:

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	158	100	282	1,060	1,940	691	3,753	841	157
2.....	304	100	248	1,300	1,330	565	3,611	793	150
3.....	377	100	231	995	1,100	506	2,027	693	146
4.....	298	103	215	691	816	464	*1,603	670	179
5.....	399	94	206	1,390	762	416	1,368	634	170
6.....	540	106	192	3,134	710	391	*1,275	500	232
7.....	384	94	184	1,496	731	385	1,205	565	189
8.....	343	94	171	957	450	361	995	614	203
9.....	310	103	162	731	498	361	897	488	376
10.....	259	112	150	720	482	349	*841	423	334
11.....	237	97	142	838	377	331	941	410	340
12.....	211	94	136	691	356	325	1,639	360	388
13.....	188	92	279	908	354	314	1,225	277	288
14.....	184	97	268	681	350	307	1,637	227	243
15.....	211	97	339	420	346	312	1,663	203	198
16.....	206	122	478	531	342	316	1,335	194	203
17.....	184	115	478	377	338	280	1,467	950	817
18.....	158	100	2,200	363	334	243	1,771	*995	642
19.....	150	550	2,312	310	330	235	1,205	600	537
20.....	142	1,952	1,508	428	326	217	977	*458	677
21.....	158	1,009	1,190	559	322	206	1,095	393	506
22.....	142	700	896	2,536	330	190	1,434	340	434
23.....	*126	513	784	1,952	325	206	1,305	458	334
24.....	126	420	662	1,140	*410	211	1,639	431	282
25.....	118	370	1,130	1,070	1,430	235	1,295	347	254
26.....	115	330	4,528	1,430	6,260	403	1,125	588	271
27.....	150	298	2,536	2,522	2,200	905	968	249	218
28.....	146	298	1,820	3,054	1,350	1,747	1,295	238	249
29.....	133	310	1,410	1,880	1,120	1,879	1,047	222	218
30.....	126	370	1,180	1,380	.....	2,545	897	194	*194
31.....	115	.....	945	1,420	.....	3,407	.....	175	.....
Mean....	216	298	879	1,192	897	623	1,454	481	314

\* Meter measurement.

NOTE.—Ice conditions, December 4 to 17, February 13 to 24 (noon) and March 6 to 26, all inclusive.

Daily discharge, in second-feet, of SCHOHARIE CREEK AT PRATTSVILLE, for the nine months ending June 30, 1916

[Drainage area, 236 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF
	Maximum	Minimum	Mean	Per square mile	Depth in inches on drainage area
October.....	540	115	216	0.92	1.056
November.....	1,952	92	293	1.26	1.409
December.....	4,528	136	879	3.72	4.294
January.....	3,134	310	1,192	5.05	5.824
February.....	6,260	322	897	3.80	4.103
March.....	3,407	190	623	2.64	3.041
April.....	3,753	841	1,454	6.16	6.866
May.....	993	175	461	1.95	2.256
June.....	817	146	314	1.33	1.487

#### SCHOHARIE CREEK AT MIDDLEBURG

**Location.**—At highway bridge over Schoharie creek at Middleburg.

**Records available.**—August 24, 1906, to June 30, 1916.

**Drainage area.**—532 square miles.\* (From U. S. G. S. topographic maps.)

**Gage.**—Staff in two sections, the lower attached to the end of a timber crib about 400 feet below the bridge, and the upper section secured to rubble retaining wall about 160 feet below bridge. Read twice daily—at 9 A. M. and 5 P. M.—to half-tenths.

**Control.**—Riffle about 1,600 feet below bridge. The bed of the stream is of gravel and cobblestones and fairly smooth and permanent. The stream overflows the banks during floods.

**Discharge measurements.**—From bridge and by wading.

**Winter flow.**—Very slight effect from ice, open-water rating curve used.

**Extremes of discharge.**—Current period: Maximum recorded discharge, April 1 at 5 P. M. and April 2 at 9 A. M., approximately 12,300 second-feet. Minimum recorded discharge, November 14 at 9 A. M. and 5 P. M., 199 second-feet.

\* The 532 square miles used above is the result of a joint determination of drainage areas, based on independent computations by engineers of the Board of Water Supply of the city of New York and of the Department of State Engineer, and replaces the figure 527 previously used in reports of the State Engineer.

1906-1916: Maximum recorded discharge, February 20, 1909, at 9 A. M., approximately 31,600 second-feet. Minimum discharge recorded, September 14 to 21, inclusive, 1913, 12 second-feet.

**Accuracy.**—New rating curve used, beginning October 1, 1915; well defined to a gage height of 6 feet.

Daily gage height, in feet, of SCHONARIE CREEK AT MIDDLEBURG, for the nine months ending June 30, 1916. George L. Danforth, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	1.50	1.50	2.05	3.15	4.60	3.15	7.95	3.12	1.72
2.....	1.68	1.50	1.92	4.20	3.70	3.15	8.25	3.02	1.68
3.....	2.13	1.58	1.75	4.00	3.18	2.95	6.15	3.00	1.62
4.....	1.93	1.50	1.60	4.90	2.85	2.75	5.80	3.02	1.82
5.....	1.88	1.50	1.55	4.60	2.98	2.45	4.68	2.82	1.78
6.....	2.42	1.50	1.50	7.10	2.85	2.20	4.65	2.72	1.82
7.....	2.15	1.50	1.60	4.70	2.80	2.00	4.55	2.78	1.72
8.....	1.98	1.50	1.52	3.15	2.42	2.05	4.08	3.35	1.70
9.....	1.88	1.50	1.65	3.00	2.32	2.00	4.42	3.35	1.80
10.....	1.80	1.50	1.60	3.20	2.32	2.02	3.65	2.80	2.02
11.....	1.75	1.45	1.58	3.30	2.42	2.25	3.90	2.68	1.95
12.....	1.73	1.40	1.65	2.95	4.00	2.20	5.00	2.40	2.12
13.....	1.58	1.40	1.40	2.85	4.00	2.00	4.40	2.30	2.08
14.....	1.50	1.35	1.40	2.92	3.72	2.02	4.35	2.15	1.90
15.....	2.25	1.43	1.40	3.00	3.50	1.88	5.10	2.05	1.72
16.....	2.25	1.53	1.40	4.75	3.62	1.88	4.55	2.05	1.65
17.....	1.88	1.58	1.48	4.00	3.72	2.52	4.50	3.05	1.95
18.....	1.78	1.50	3.36	3.70	3.58	2.35	4.80	3.65	2.70
19.....	1.65	1.48	5.09	3.30	3.20	2.00	4.28	2.95	2.38
20.....	1.73	4.05	3.95	3.55	2.75	2.00	3.95	2.65	2.60
21.....	1.80	3.75	3.42	4.05	2.60	1.95	3.90	2.62	2.32
22.....	1.73	2.80	3.20	4.55	2.55	1.80	4.20	2.40	2.08
23.....	1.63	2.38	3.15	4.40	2.55	1.80	4.45	2.52	1.98
24.....	1.50	2.23	2.85	3.60	2.60	1.80	4.58	2.55	1.85
25.....	1.50	2.08	2.85	3.25	3.68	2.00	4.22	2.32	1.72
26.....	1.50	2.05	7.50	3.90	6.29	2.33	3.95	2.18	1.80
27.....	1.73	2.05	4.88	4.90	5.30	2.60	3.75	2.08	1.78
28.....	1.60	2.05	4.25	5.82	4.65	4.10	3.78	2.00	1.65
29.....	1.55	1.98	3.58	4.32	3.75	5.40	3.88	1.98	1.68
30.....	1.50	2.15	3.15	4.20	.....	6.10	3.48	1.88	1.52
31.....	1.50	.....	3.02	3.86	.....	7.75	.....	1.80	.....

Daily discharge, in second-feet, of SCHOHARIE CREEK AT MIDDLEBURG, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1	250	250	519	1,350	3,030	1,350	9,490	1,320	346
2	328	280	448	2,500	1,910	1,350	10,250	1,230	328
3	586	283	360	2,250	1,370	1,170	5,570	1,210	301
4	451	250	292	3,460	1,080	1,000	4,930	1,230	306
5	425	250	270	3,030	1,190	775	8,140	1,060	375
6	754	250	250	7,510	1,090	609	3,100	976	395
7	578	250	250	3,170	1,040	490	2,960	1,020	346
8	479	250	258	1,860	754	519	2,350	1,540	337
9	425	250	314	1,210	686	490	2,780	1,540	385
10	385	250	292	1,390	686	502	1,850	1,040	502
11	360	232	283	1,490	754	640	2,130	945	462
12	351	215	270	1,170	2,250	609	8,610	740	559
13	283	215	215	1,080	2,250	490	2,760	672	536
14	250	199	215	1,140	1,930	502	2,690	578	435
15	640	225	215	1,800	1,690	425	3,760	519	246
16	640	282	215	3,240	1,320	425	2,960	519	314
17	425	283	243	2,250	1,930	825	2,890	1,250	462
18	375	250	1,560	1,910	1,780	706	3,810	1,860	960
19	314	243	3,740	1,490	1,390	490	2,600	1,170	726
20	361	2,810	2,160	1,740	1,060	490	2,190	922	884
21	385	1,960	1,610	2,310	884	402	2,130	809	686
22	351	1,040	1,390	2,960	847	385	2,500	740	536
23	306	726	1,350	2,780	847	385	2,820	825	479
24	260	628	1,060	1,800	884	385	3,000	847	410
25	250	586	1,060	1,640	1,860	490	2,520	686	346
26	250	519	8,410	2,130	5,840	692	2,190	506	385
27	351	519	3,430	3,460	4,080	884	1,960	526	375
28	292	519	2,560	4,970	3,100	2,370	2,000	490	314
29	270	479	1,780	2,660	1,960	4,250	2,110	479	328
30	250	578	1,350	2,500	.....	5,480	1,670	425	258
31	250	.....	1,230	2,070	.....	9,000	.....	385	.....
Mean	382	482	1,215	2,374	1,722	1,246	3,274	911	450

Monthly discharge of SCHOHARIE CREEK AT MIDDLEBURG, for the nine months ending June 30, 1916

[Drainage area, 532 square miles\*]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF Depth in inches on drainage area
	Maximum	Minimum	Mean	Per square mile	
October	754	250	382	0.718	0.83
November	2,810	199	482	0.906	1.01
December	8,410	215	1,215	2.284	2.63
January	4,970	1,080	2,374	4.462	5.14
February	5,840	686	1,722	3.237	3.49
March	9,000	385	1,246	2.342	2.70
April	10,250	1,670	3,274	6.154	6.87
May	1,850	385	911	1.712	1.97
June	960	258	450	0.846	0.94

\* See station description.

## SCHOHARIE CREEK AT CENTRAL BRIDGE

This station, established April 3, 1904, and maintained by this Department in coöperation with the United States Weather Bureau, is located on the D. & H. R. R. bridge across Schoharie creek near Schoharie Junction. Discharge is not computed at this station. The water-surface elevations are referred to United States Geological Survey datum. A standard chain gage attached to the downstream truss is read twice daily—between 6 and 7:30 A. M. and between 4:30 and 7 P. M.—to half-tenths.

Daily elevation of water-surface (U. S. G. S. Datum) of SCHOHARIE CREEK AT CENTRAL BRIDGE, for the nine months ending June 30, 1916. A. M. Spencer, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	567.43	537.63	533.53	575.93	572.19	570.03	575.23	570.43	568.08
2.....	567.51	567.61	533.41	576.73	570.33	570.48	573.53	567.73	568.08
3.....	568.31	567.58	563.31	570.63	570.03	571.98	572.43	569.48	568.06
4.....	568.03	567.58	568.26	575.53	563.58	571.63	571.98	569.31	568.03
5.....	567.96	567.56	568.16	574.93	563.53	571.23	571.78	569.18	567.96
6.....	568.83	567.56	563.06	580.63	567.53	570.83	571.58	569.11	567.88
7.....	568.53	567.53	563.01	574.23	568.28	570.58	571.28	569.38	567.83
8.....	568.21	567.53	567.91	574.88	571.73	570.73	570.78	569.66	567.83
9.....	567.98	567.53	567.98	574.93	572.23	571.13	570.58	569.38	568.03
10.....	567.78	567.53	568.38	574.73	571.96	570.83	570.53	569.26	568.13
11.....	567.78	567.53	568.18	574.73	571.58	570.56	571.03	569.16	568.11
12.....	567.73	567.53	568.13	573.93	571.28	569.38	572.28	569.93	568.08
13.....	567.69	567.60	568.13	573.53	571.53	570.06	571.98	569.61	568.03
14.....	567.61	567.61	568.13	572.98	571.58	569.98	572.73	569.31	567.98
15.....	568.73	567.56	568.03	572.10	571.56	568.88	572.83	569.16	567.93
16.....	568.63	567.81	568.08	572.38	571.51	568.93	571.93	569.06	567.93
17.....	568.28	567.73	563.03	572.23	571.21	570.03	571.78	569.88	568.08
18.....	568.08	567.66	569.31	571.53	571.01	570.58	572.18	570.83	568.11
19.....	567.01	567.71	573.68	571.48	570.83	570.03	571.93	569.63	568.48
20.....	567.91	568.71	571.71	571.16	570.78	568.63	571.58	568.28	568.73
21.....	567.83	569.51	570.91	571.38	570.71	569.63	571.38	569.06	a
22.....	567.76	569.18	570.58	576.03	570.63	568.58	571.83	568.91	a
23.....	567.68	568.76	570.43	578.38	570.61	568.58	571.98	568.93	a
24.....	567.63	568.63	568.83	573.33	570.58	568.63	571.63	568.71	a
25.....	567.61	568.56	568.58	578.13	570.68	568.71	571.43	568.56	a
26.....	567.58	568.46	575.83	573.73	576.48	568.51	571.58	568.43	a
27.....	567.83	568.36	573.71	574.08	571.63	570.73	571.93	568.31	a
28.....	567.78	568.26	572.33	573.46	571.03	572.63	571.53	568.23	a
29.....	567.73	568.13	570.88	571.21	570.63	574.53	571.43	568.16	a
30.....	567.71	568.03	575.23	570.53	.....	574.63	571.03	568.13	a
31.....	567.68	.....	575.43	571.78	.....	577.23	.....	568.08	.....

a No record; chain stolen.

## SCHOHARIE CREEK AT FORT HUNTER

This station, located on Schoharie creek above the State feeder dam at Fort Hunter, was originally established by the U. S. Deep Waterways Survey, September 24, 1898. Reestablished November 17, 1904, in coöperation with the U. S. Weather Bureau, it is now maintained by this Department. Because of unfavorable conditions, increased leakage and indeterminate diversion for the supply of the Erie canal, discharge estimates were discontinued December 31, 1914. A chain gage on the downstream side near the south end of the highway bridge about 500 feet above the dam is read twice daily—at 8 A. M. and 5 P. M.—to tenths.

Daily elevation of water-surface (B. C. DATUM) of SCHOHARIE CREEK AT FORT HUNTER, for the nine months ending June 30, 1916. C. E. Wing, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	281.25	281.53	281.75	282.45	283.0	282.9	285.55	282.75	281.85
2.....	281.35	281.5	281.8	282.9	282.9	284.95	283.5	282.7	281.7
3.....	281.4	281.5	281.75	283.35	282.85	282.9	284.45	282.55	281.75
4.....	281.25	281.5	281.7	282.7	282.6	282.85	284.1	282.4	281.75
5.....	281.75	281.55	281.55	284.9	282.45	282.7	283.55	282.2	281.7
6.....	281.5	281.5	281.65	283.8	282.55	282.6	283.8	282.15	281.65
7.....	281.45	281.5	281.7	284.1	282.25	282.4	283.7	282.3	281.75
8.....	281.55	281.45	281.7	283.2	282.2	282.35	283.3	282.25	281.65
9.....	281.5	281.55	281.7	283.05	282.15	282.15	282.95	282.35	281.65
10.....	281.35	281.5	281.65	282.45	282.1	282.1	282.9	282.2	281.75
11.....	281.55	281.5	281.7	282.6	282.05	282.1	283.25	282.1	281.7
12.....	281.5	281.5	281.35	282.35	282.0	282.05	283.9	282.15	281.7
13.....	281.4	281.55	281.35	282.7	282.05	282.1	283.65	282.05	281.65
14.....	281.35	281.35	281.3	282.7	282.1	282.0	284.15	281.95	281.6
15.....	281.85	281.45	281.3	282.55	282.15	282.05	284.0	281.8	281.75
16.....	281.8	281.35	281.25	282.35	282.25	282.1	283.5	281.95	281.85
17.....	281.95	281.45	281.3	282.55	282.3	282.1	283.6	282.3	282.25
18.....	281.65	281.45	281.35	282.8	282.5	282.1	283.5	282.8	282.15
19.....	281.6	281.55	283.4	282.75	282.4	282.15	283.5	282.55	281.95
20.....	281.65	281.75	282.65	282.8	282.2	282.0	283.4	282.3	281.9
21.....	281.8	282.45	282.85	282.8	282.0	282.0	283.1	282.15	281.75
22.....	281.5	282.65	282.9	282.9	281.95	282.05	283.4	282.0	281.65
23.....	281.5	281.75	282.25	284.65	281.85	282.1	283.5	282.0	281.7
24.....	281.35	281.55	282.2	283.8	281.95	282.2	283.7	282.1	281.65
25.....	281.3	281.5	282.05	283.45	282.2	282.3	283.65	282.05	281.7
26.....	281.35	281.65	282.2	283.8	284.2	282.55	283.5	282.0	281.95
27.....	281.55	281.65	286.4	283.55	283.6	282.85	282.9	281.95	281.95
28.....	281.5	281.9	283.2	284.7	282.95	283.35	282.75	281.8	282.05
29.....	281.5	282.2	283.05	283.4	282.7	284.6	282.95	281.55	281.7
30.....	281.45	281.75	282.4	283.4	.....	284.3	282.9	281.75	281.65
31.....	281.5	.....	282.55	283.15	.....	285.5	.....	281.85	.....



## ALPLAUS KILL

## ALPLAUS KILL NEAR CHARLTON

**Location.**—At the highway bridge about one-half mile southwest of the village of Charlton, Saratoga county.

**Records available.**—August 12, 1913, to June 30, 1916.

**Drainage area.**—24.9 square miles. (Computed by engineers of State Conservation Commission.)

**Gage.**—Automatic water-gage recorder in a 5 by 6-foot wooden house over a 2½ by 6-foot timber well. The well is connected with the stream by a 4-inch cast-iron water pipe. An auxiliary staff gage is located on the upstream corner of the left abutment of the bridge.

**Control.**—In 1914 a low concrete control about 43 feet long, was constructed under the bridge between its abutments. The control was provided with a sharp steel crest and had an average height of from 1 to 1.5 feet above the bottom. Near the center of the control was a rectangular notch 3.0 feet long and 0.2 foot below the remainder of the crest. In the center of this rectangular weir was a V notch, the top width being 6 inches and the angle 60 degrees.

The concrete weir was damaged by flood July 27, 1915, in which about half the weir was carried away. The flood of August 22, 1915, entirely removed the remainder of the control and formed a natural control of boulders about 200 feet downstream.

**Discharge measurements.**—Made by wading below the weir or from the bridge at high stages. A number of measurements have been made by the volumetric method when the flow was confined to the V notch.

**Regulation.**—Some diurnal fluctuation is caused by a grist-mill a short distance upstream during the spring months.

**Winter flow.**—Discharge relation affected by ice. Flow determined by frequent discharge measurements and climatologic data.

**Extremes of discharge.**—Current period: Maximum stage from water-stage recorder, 14.12 feet at 10:00 p. m., March 30; discharge not computed. Minimum stage from water-stage recorder, 9.68 feet at noon, June 3; discharge, 4.0 second-feet.

1913–1916: Maximum stage from water-stage recorder, 15.3 feet at 3:30 a. m., July 27, 1915; discharge, not computed.

Minimum discharge from water-stage recorder practically zero, August 16 to 29, and September 5 to 21, 1913.

**Coöperation.**—Established and maintained by the United States Geological Survey in coöperation with the State Conservation Commission.

Discharge measurements of ALPLAUS KILL NEAR CHARLTON, during the nine months ending June 30, 1916

DATE	Made by	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>
Oct. 5 a.	A. H. Davison	10.40	45.4
Oct. 5 a.	A. H. Davison	10.69	84.8
Oct. 14 b.	O. W. Hartwell	9.98	14.5
Oct. 14 b.	O. W. Hartwell	9.85	8.0
Oct. 14 b.	A. H. Davison	9.78	6.5
Oct. 14 b.	O. W. Hartwell	9.75	5.9
Nov. 16 c.	E. D. Burchard	10.35	40.5
Nov. 16 c.	E. D. Burchard	10.16	25.2
April 19 a.	A. H. Davison	10.46	63.0
April 19 a.	A. H. Davison	10.50	66.8
June 2 d.	E. D. Burchard	9.70	4.18
June 2 d.	E. D. Burchard	9.70	4.42
June 2 d.	E. D. Burchard	9.70	4.36
June 2 d.	E. D. Burchard	9.70	4.21

a Measurement made by wading 50 feet above gage.

b Measurement made by wading 500 feet above gage.

c Measurement made by wading 400 feet above gage.

d Measurement made by wading 300 feet below gage.

Daily discharge, in second-feet, of ALPLAUS KILL NEAR CHARLTON, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1		10	22					26	6.6
2		9.8	17					23	4.6
3		9.4	15					22	4.3
4		8.0	17				316	36	6.8
5		16					287	23	7.7
6	34	21					475	23	16
7	18	9.4	8.0				316	16	12
8	15	8.8	7.3				196	28	7.4
9	12	13	12				158	42	11
10	9.4	9.0	6.4				172	23	14
11	8.3	7.6	5.4				202	20	15
12	11	7.3					339	14	13
13	6.3	9.7					202	12	11
14	7.7	6.3					308	11	8.0
15	100	36					236	11	5.7
16	36	33					145	13	26
17	21	17					133	460	30
18	17	14					110	106	23
19	17	54					76	44	54
20	20	125					62	23	41

Daily discharge, in second-feet of ALPLAUS KILL NEAR CHARLTON, for the nine months ending June 30, 1916 — *Continued*

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
21.....	21	53	.....	.....	.....	.....	55	19	18
22.....	13	40	.....	.....	.....	.....	104	16	14
23.....	12	27	.....	.....	.....	.....	167	50	8.2
24.....	11	25	.....	.....	.....	.....	133	29	8.8
25.....	9.4	20	.....	.....	.....	.....	76	17	15
26.....	12	18	.....	.....	.....	.....	55	12	14
27.....	39	20	.....	.....	.....	.....	44	9.6	23
28.....	21	18	.....	.....	.....	.....	46	8.8	96
29.....	16	47	.....	.....	.....	.....	39	8.2	19
30.....	14	50	.....	.....	.....	.....	32	8.0	11
31.....	12	.....	.....	.....	.....	.....	.....	7.4	.....
Mean....	18.0	24.7	.....	.....	.....	.....	201	37.4	18.3

NOTE.— Mean daily discharge determined by discharge integration of records from the water-stage recorder for days when the mean daily gage height did not indicate the mean daily discharge. Mean discharge, April 1 to 3, inclusive, estimated 520 second-feet.

Monthly discharge of ALPLAUS KILL NEAR CHARLTON, for the nine months ending  
June 30, 1916

[Drainage area, 24.9 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF	Accu- racy
	Maximum	Minimum	Mean	Per square mile	Depth in inches on drainage area	
October.....	100	6.3	19.0	0.723	0.83	C
November.....	125	6.3	24.7	0.932	1.11	C
December 1-11.....	22	5.4	11.7	0.470	0.19	C
April.....	.....	32	201	8.07	9.03	D
May.....	460	7.4	37.4	1.59	1.73	C
June.....	96	4.3	18.3	0.735	0.82	C

## ESOPUS CREEK

### DESCRIPTION

Esopus creek has its source in Winnisook lake on the north-western slope of Slide mountain, the highest peak of the Catskills. From Big Indian to Olive Bridge the stream flows through a deep valley, flanked on both sides by timber-covered mountains. Numerous sites for dams or storage reservoirs are offered at points where the valley broadens out for a short distance to receive the inflowing waters of tributaries. The stream channel is relatively broad and shallow. The bed is covered with cobbles and small boulders left behind after the erosion of drift deposits,

which formerly filled the valley. The drainage basin of Esopus creek is shown on the Margaretville, Phoenicia, Kaaterskill, Catskill, Slide Mountain, Rosendale and Rhinebeck sheets of the U. S. Geological Survey topographic maps. This stream is of great economical importance, owing to its relatively large yield and its location. The Ashokan reservoir, with a water-surface of 12 square miles and a total drainage area above the dam of 257 square miles, is one of the sources of water-supply for New York city.

#### ESOPUS CREEK AT COLDBROOK

**Location.**—At highway bridge about 1,000 feet above Coldbrook railroad station on U. & D. R. R.; about six miles west of Ashokan.

**Records available.**—August 27, 1913, to June 30, 1916.

**Drainage area.**—192 square miles.\* (Measured on U. S. G. S. topographic maps.)

**Gages.**—Standard B. W. S. chain gage, read twice daily. A Bristol water-level gage with charts for range of 20 feet. On June 15, 1916, a Friez automatic register was installed. These gages are located on the downstream side of the highway bridge.

**Control.**—Coarse gravel, apparently permanent, and numerous small boulders and some riprap. Channel above station straight for about three hundred feet; water swift. Channel below station straight for about one thousand feet; water swift. Right bank high, grassed, and largely covered with brush, not liable to overflow. Left bank high, wooded, not liable to overflow.

**Discharge measurements.**—At low stages, made by wading; at high stage, from the highway bridge (clear span of 160 feet).

**Winter flow.**—Discharge relation seriously affected by ice. **Flow** determined by meter and float measurements and climatological data.

**Extremes of discharge.**—Calendar year 1916: Maximum stage estimated, 11.00 feet on February 25 at 8:00 p. m.; discharge, 13,000 second-feet. Minimum stage recorded, 3.34 feet on September 14 and October 13; discharge, 39 second-feet.

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\* The 192 square miles used above is the result of a joint determination of drainage areas based on independent computations by the engineers of the Board of Water Supply of the city of New York and of the Department of State Engineer.

1913-1916: Maximum stage recorded, 12.75 feet on November 9, 1913, at 8 P. M.; discharge, about 21,400 second-feet. Minimum stage recorded, 3.21 feet on October 14, 1914; discharge, 8 second-feet.

**Accuracy.**—Discharge rating curve well defined up to a gage height of 10 feet.

**Coöperation.**—Established and maintained by the Board of Water Supply of the city of New York. Turbidity and climatological observations are made at this station.

Daily discharge, in second-feet, of ESOPUS CREEK AT COLDBROOK, for the nine months ending June 30, 1916. J. H. Robinson, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	148	104	*311	732	1,220	1,140	2,680	757	316
2.....	*243	98	386	757	986	646	2,450	738	326
3.....	218	83	266	634	896	498	2,428	658	340
4.....	186	87	250	556	757	470	1,620	684	380
5.....	218	*104	246	616	694	426	1,292	538	316
6.....	258	98	246	1,238	598	416	1,124	481	*292
7.....	234	87	*222	664	568	418	1,108	481	292
8.....	253	82	222	634	586	406	998	469	406
9.....	234	*104	214	616	538	364	924	426	484
10.....	218	93	265	598	416	390	805	399	526
11.....	266	90	180	556	374	306	770	*354	515
12.....	206	87	155	426	364	250	*805	316	498
13.....	206	87	214	568	326	279	910	306	470
14.....	*194	84	554	598	324	266	1,292	279	*416
15.....	182	110	484	354	322	238	1,310	270	395
16.....	178	116	382	442	320	210	1,238	262	580
17.....	148	141	380	364	318	265	1,292	924	1,872
18.....	155	171	2,040	306	316	200	1,328	738	1,382
19.....	152	*1,172	1,247	292	314	195	1,140	634	1,132
20.....	174	1,680	973	279	312	190	980	574	988
21.....	155	1,020	812	481	310	240	924	515	812
22.....	148	782	658	875	308	225	1,220	491	719
23.....	130	*574	598	1,124	306	215	1,100	574	598
24.....	120	504	574	986	*306	275	998	515	498
25.....	*117	437	459	840	6,452	290	924	498	470
26.....	120	*411	1,650	945	4,002	306	896	480	442
27.....	170	385	1,387	1,808	1,800	*470	854	442	374
28.....	140	345	1,140	2,948	1,328	840	*896	422	364
29.....	130	385	1,012	1,800	*924	1,076	784	450	316
30.....	120	335	826	1,292	.....	1,780	757	406	470
31.....	117	.....	738	1,140	.....	2,428	.....	354	.....
Mean....	177	327	610	823	908	505	1,194	496	560

\* Meter measurement.

° Estimated.

NOTE.—Ice conditions, December 13 to 17, inclusive, February 14 to 24, inclusive, and March 17 to 25, inclusive. Flows based on meter measurement and climatological data. Beginning June 15, flow is computed from Fries automatic record. Previous record is from 2 chain-gage readings a day.

**Monthly discharge of ESOPUS CREEK AT COLDBROOK for the nine months ending  
June 30, 1916**

[Drainage area, 192 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF
	Maximum	Minimum	Mean	Per square mile	Depth in inches on drainage area
October.....	258	117	177	0.92	1.960
November.....	1,690	82	327	1.70	1.890
December.....	2,040	155	610	3.18	3.661
January.....	2,948	279	823	4.29	4.941
February.....	6,452	306	908	4.73	5.098
March.....	2,428	190	505	2.63	3.033
April.....	2,680	757	1,194	6.22	6.938
May.....	924	262	496	2.58	2.979
June.....	1,872	270	560	2.92	3.255

**ESOPUS CREEK AT MOUNT MARION**

**Location.**— At downstream side of Pleasant Valley bridge over Esopus creek, about  $\frac{3}{4}$  mile east of Mount Marion railroad station on West Shore railroad, and about 3 miles above Saugerties.

**Records available.**— April 4, 1907, to June 30, 1916.

**Drainage area.**—Total drainage area above Mount Marion is 418 square miles as measured on U. S. G. S. topographic maps. Of this area 33 square miles of the Sawkill watershed is diverted for the Kingston water-supply, 17 square miles of the Plattekill watershed for the Saugerties water-supply, and 257 square miles at Brown's Station for New York city water-supply.

The conduit of the Olive Bridge dam was closed September 9, 1913, at 6:05 p. m., thereafter influencing the flow by storage and waste.

There remains an effective drainage area of 111 square miles above this station when no water is being wasted from the three points of diversion.

The square miles used above are the result of a joint determination of drainage areas based on independent computations by the engineers of the Board of Water Supply of the city of New York and of the Department of State Engineer.

For the Board of Water Supply records for the years 1907 to 1912, inclusive, the drainage area was called 378 square miles (does not include Sawkill and Plattekill diversions), based on published records at Kingston.

**Gage.**—Standard Board of Water Supply chain gage read twice daily. Staff gage for low flows.

**Control.**—Bed of stream mostly ledge-rock, with strata steeply inclined, giving jagged corners and a very irregular cross-section. Channel above bridge station straight for about 1,000 feet; water sluggish except in high stage. Channel below station straight for about 700 feet; swift at a distance of about 600 feet below station where rift is located. Right bank about 40 feet high, steep and wooded. Left bank about 100 feet high, steep and rocky for about 40 feet above stream bed, and then wooded.

**Discharge measurements.**—At low stages, wading measurements are made at point about  $\frac{3}{4}$  mile above bridge, where bottom is sandy with no gravel. At high stages, from bridge.

**Winter flow.**—Discharge relation affected by ice. Flow determined by meter measurements and climatological data.

**Extremes of discharge.**—From April 4, 1907, to September 9, 1913, (closing of conduit in Olive Bridge dam), maximum discharge observed was 28,000 second-feet on April 26, 1910, at 1:30 P. M.; maximum stage, 25.10 feet. Minimum discharge for this period was 27 second-feet on September 1, 1907, for minimum stage of 10.45 feet.

Since the impounding of water in the Ashokan reservoir (September 9, 1913), up to December 31, 1915, the maximum discharge of 10,396 second-feet for a stage of 19.22 feet occurred on February 25, 1915, at 8 A. M. The minimum stage of 10.20 feet for this period gave, on August 24 to August 27, 1914, inclusive, a discharge of 4 second-feet.\*

**Accuracy.**—Discharge rating curve fairly well defined. Soundings for measurements at bridge, on account of irregular cross-section are computed from standard cross-section.

**Regulation.**—Affected by storage and waste from Ashokan reservoir at Brown's Station, capacity, 132 billion gallons.

**Diversion.**—For Kingston and Saugerties water-supplies see drainage area above.

**Coöperation.**—Established and maintained by the Board of Water Supply of the city of New York.

**Emendation.**—Report of State Engineer for 1915, Vol. II, page 344, daily discharge, August 16, 1915, should read 235.

\* There is doubt as to the accuracy of this minimum flow, as the gage height was determined with a chain gage, which for this stage, i.e., 10.20 ft., had a length of 50 feet. A staff gage has been established, in order to obtain minimum flows with greater accuracy in the future.

Daily discharge, in second-feet, of ESOPUS CREEK AT MOUNT MARION, for the nine months ending June 30, 1916. John Sauer, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	1,274	590	155	480	756	606	2,460	265	148
2.....	1,350	463	144	5 6	606	463	2,080	226	124
3.....	1,350	344	134	575	429	*397	1,335	179	124
4.....	1,312	265	114	494	409	351	992	192	179
5.....	1,312	*280	104	429	409	315	798	179	162
6.....	1,312	192	104	756	359	252	661	167	155
7.....	1,448	120	96	517	672	225	590	155	120
8.....	1,565	84	88	450	756	247	494	155	162
9.....	1,610	79	79	300	322	225	508	144	*212
10.....	1,655	67	62	284	235	198	540	128	179
11.....	1,610	61	62	284	197	184	494	114	172
12.....	1,610	61	62	252	167	184	471	114	333
13.....	*1,592	53	58	267	220	173	471	104	256
14.....	†1,565	51	67	316	252	238	606	96	287
15.....	1,520	77	58	238	184	238	786	96	192
16.....	1,502	77	67	238	150	265	644	104	187
17.....	1,430	64	67	184	140	225	555	471	2,020
18.....	1,390	59	108	130	140	173	508	628	4,088
19.....	1,350	67	1,390	130	130	173	421	450	3,800
20.....	1,502	1,448	1,061	140	130	161	359	351	3,612
21.....	1,538	1,183	880	150	130	173	315	274	2,940
22.....	1,475	1,061	617	300	121	173	322	2 6	*2,700
23.....	1,390	978	517	655	121	173	381	287	1,046
24.....	1,350	912	463	486	140	161	333	297	381
25.....	1,274	978	409	465	238	161	315	235	256
26.....	1,236	848	2,700	798	4,088	198	*287	192	274
27.....	1,160	798	1,655	1,520	1,820	508	265	167	214
28.....	1,084	287	1,084	2,000	978	1,107	297	155	172
29.....	964	192	816	1,259	717	1,750	297	333	155
30.....	861	197	798	835	.....	2,604	250	256	128
31.....	728	.....	628	728	.....	3,080	.....	197	.....
Mean....	1,365	365	472	522	518	495	629	224	826

\* Meter measurement.

† Meter measurement at Kingston.

NOTE.—Ice conditions, December 10 to 17, inclusive, January 9 to 25, inclusive, February 14 to 25, inclusive, and March 6 to 25, inclusive.

Water was wasted through waste channel at head-works, Ashokan reservoir, from October 1 to November 27 (11 A. M.).

Monthly discharge of ESOPUS CREEK AT MOUNT MARION, for the nine months ending June 30, 1916

[Drainage area, see station description]

MONTH	DISCHARGE IN SECOND-FEET		
	Maximum	Minimum	Mean
October.....	1,655	728	1,365
November.....	1,448	51	365
December.....	2,700	58	472
January.....	2,000	130	522
February.....	4,088	121	518
March.....	3,080	161	495
April.....	2,460	265	627
May.....	628	96	224
June.....	4,088	120	826



## RONDOUT CREEK

## DESCRIPTION

Rondout creek has its source in the heart of the timber-covered mountain group forming Wittemberg chain. It flows southeasterly to Napanoch, where it encounters the foot of Shawangunk range, turns abruptly to the northeast and enters the Hudson river at Rondout. Its watershed on the south is very restricted, as it is separated from the Wallkill river only by the narrow Shawangunk ridge. Notable waterfalls occur at Honk falls and Napanoch over Hudson river shale, and on Good Beer kill above Ellenville. At Honk falls a natural declivity afforded a fall of 125 feet, which has been increased to 147.5 feet by the construction of a masonry dam at the head of the gorge. On Good Beer kill there is a total fall of 870 feet from the Cape, 3 miles above Ellenville, to Ellenville. Of this about 200 feet are concentrated in a series of cascades, called Hanging Rock falls.

Water-power was originally developed at Napanoch in 1754. There is in this village a total fall of 115 feet. A series of cascades, involving a descent of about 50 feet, occurs at High Falls, where the water flows over Rosendale cement rock.

## RONDOUT CREEK AT LACKAWACK

**Location.**—At highway bridge, known as Wilbur's bridge, about 3 miles from Lackawack on road to Napanoch (reached by Ontario and Western railroad from Kingston to Napanoch and then a distance of 4 miles by Grahamsville stage).

**Records available.**—May 1, 1910, to June 30, 1916. (Honk falls\* records available, February 13, 1906, to April 30, 1910, inclusive.)

**Drainage area.**—100 square miles† determined from U. S. G. S. topographic maps and by special survey of part of watershed line by Board of Water Supply (1910–1912, inclusive, drainage area considered 104 square miles, based on incomplete data).

**Gage.**—Standard Board of Water Supply chain gage and Friez automatic stage register, read twice daily.

**Control.**—Sandy bottom from Sta. 0 to 45. Station 45 to 85 strewn with boulders. Section apparently permanent. Clear

\* Honk falls is a short distance below this station.

† The 100 square miles used above is checked by the result of a joint determination of drainage areas based on independent computations by engineers of the Board of Water Supply of the city of New York and of the Department of State Engineer.

span, 85 feet. Channel above station straight for about 3,000 feet; water swift. Channel below station straight for about 1,000 feet; water swift. Right bank high, wooded. Left bank high, clean.

**Discharge measurements.**—At high stages, from highway bridge. At low stages, by wading at a point about a mile below Wilbur's bridge, where bottom is gravelly.

**Winter flow.**—Discharge relation seriously affected by ice when channel is completely frozen over. Flow determined by meter measurements and climatological data.

**Extremes of discharge.**—Calendar year 1916: Maximum stage recorded, 9.85 feet on July 26, 1916, at 2:00 P. M.; discharge, 11,450 second-feet. Minimum stage recorded, 2.35 feet on September 13 and 14; discharge, 35 second-feet.

1910–1916: Maximum stage recorded, 10.40 feet on November 9, 1913, at 7:30 P. M.; discharge, 14,000 second-feet. Minimum stage recorded, 2.07 feet on October 8, 1914; discharge, 14 second-feet.

**Accuracy.**—Discharge rating curve well defined.

**Coöperation.**—Established and maintained by Board of Water Supply of the city of New York. Climatological observations are made at this station.

**Emendation.**—Report of State Engineer for 1915, Vol. II, page 347, daily discharge, October 31, 1915, should read 32.

Daily discharge, in second-feet, of RONDOUT CREEK AT LACKAWACK, for the nine months ending June 30, 1916. Frank J. Thonemann, Observer

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	57	73	145	273	756	321	1,660	291	180
2.....	76	66	141	394	590	291	1,770	245	147
3.....	106	66	134	324	488	284	1,036	234	188
4.....	86	66	125	267	402	236	845	223	303
5.....	113	73	116	286	870	226	666	206	199
6.....	145	78	114	426	350	199	610	194	160
7.....	106	73	111	288	315	218	600	199	202
8.....	100	73	110	218	266	221	522	211	270
9.....	89	73	110	202	282	199	502	218	279
10.....	79	79	98	236	242	186	468	197	266
11.....	76	78	102	253	216	178	426	176	282
12.....	73	74	108	206	211	168	482	160	242
13.....	68	66	132	256	206	180	466	141	242
14.....	66	66	383	245	190	184	929	134	204
15.....	71	94	369	194	194	199	880	141	192
16.....	73	105	333	228	256	180	654	148	390
17.....	62	81	281	188	212	160	590	615	1,450
18.....	62	73	978	186	190	145	615	466	1,500
19.....	62	315	887	221	194	160	450	334	660
20.....	90	506	498	253	196	162	398	309	470

Daily discharge, in second-feet, of RONDOUT CREEK AT LACKAWACK, for the nine months ending June 30, 1916 — *Continued*

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
21.....	89	294	382	250	215	156	398	178	*382
22.....	74	231	291	450	223	150	555	182	350
23.....	62	188	264	550	233	147	*654	273	282
24.....	57	178	253	338	238	141	506	300	262
25.....	62	172	236	321	810	148	434	221	276
26.....	65	158	894	462	1,812	216	370	178	259
27.....	97	158	826	1,082	684	327	366	162	209
28.....	110	158	438	1,836	446	540	394	176	192
29.....	106	168	390	1,052	370	744	346	245	166
30.....	57	170	318	654	.....	1,276	324	209	152
31.....	66	.....	264	625	.....	1,400	.....	184	.....
Mean....	82	135	307	411	384	301	631	228	344

\* Meter measurement.

† Estimated.

NOTE.— Ice conditions, December 11 to 17, inclusive, February 15 to 24, inclusive, and March 16. Maximum flow on December 18 at 12.30 P. M., 8,200 second-feet, maintained only for a moment.

Monthly discharge of RONDOUT CREEK AT LACKAWACK, for the nine months ending June 30, 1916

[Drainage area, 100 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF
	Maximum	Minimum	Mean	Per square mile	Depth in inches on drainage area
October.....	145	57	82	0.82	0.939
November.....	506	56	135	1.35	1.506
December.....	978	98	307	3.07	3.544
January.....	1,836	186	411	4.11	4.736
February.....	1,812	190	384	3.84	4.141
March.....	1,400	141	301	3.01	3.467
April.....	1,770	324	631	6.31	7.040
May.....	615	134	228	2.28	2.627
June.....	1,500	147	344	3.44	3.842

### RONDOUT CREEK AT ROSENDALE

**Location.**— Rosendale highway bridge, downstream side. Reached by Wallkill Valley railroad from Kingston.

**Records available.**— January 1, 1907, to June 30, 1916.\*

**Drainage area.**— 386 square miles, determined from U. S. G. S. topographic maps and by special survey of part of watershed line by Board of Water Supply (1907 to 1912, inclusive, area considered 380 square miles, based on government records for year 1903).†

\* Established July 6, 1901, by the United States Geological Survey in cooperation with the New York City Water Supply Departments and taken over by the Board of Water Supply, June 1, 1907.

† The 386 square miles used above is checked by the result of a joint determination of drainage areas based on independent computations by the engineers of the Board of Water Supply of the city of New York and of the Department of State Engineer.

**Gage.**—Standard Board of Water Supply chain gage, read twice daily.

**Control.**—River bed smooth, ledge-rock bottom. Clear span of 136 feet. Channel above and below station straight for about 300 feet. Banks high, rocky and slightly wooded, not liable to overflow.

**Discharge measurements.**—At high stages, from highway bridge. At low stages, by wading at point about 1 mile below bridge, where river bed is gravelly.

**Winter flow.**—Discharge relation seriously affected by ice. Flow determined by meter measurements and climatological data.

**Extremes of discharge.**—Calendar year 1916: Maximum discharge, July 27 at 7:30 A. M., 14,000 second-feet. Minimum discharge on October 17, 68 second-feet.

1907–1916: Maximum stage recorded, 18.57 feet on April 26, 1910, at 4:30 P. M.; discharge, 21,600 second-feet. Minimum stage recorded, 5.77 feet on August 30, and September 1 to 3, 1907; discharge, 20 second-feet.

**Accuracy.**—Discharge rating curve fairly well defined.

**Diversion.**—The Delaware and Hudson canal, which is abandoned above High Falls, draws its supply of water from the natural flow of Rondout creek at a point above Rosendale. A 3-foot staff gage is read at Rock Locks when water of Delaware and Hudson canal is discharged through rock channel, 3.4 feet wide, formed by masonry wall of lock near entrance and left bank wall. Stop-planks are placed to form weir, and discharge is computed by weir formula and added to Rosendale bridge discharge for final record. From time to time measurements are made to check weir discharge. Canal is operated only during summer months, on a small scale.

**Regulation.**—At Honk falls dam, above Napanoch, and at High Falls, where power-houses are located, operations affect the natural flow of the creek.

**Coöperation.**—Maintained by Board of Water Supply of the city of New York. Climatological observations are made at this station.

**Emendation.**—Report of State Engineer for 1915, Vol. II, page 350, daily discharge, January 31, 1916, should read 634.

Daily discharge, in second-feet, of RONDOUT CREEK AT ROSENDALE, for the nine months ending June 30, 1916. Edward J. Huben, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	165	199	519	1,370	2,300	1,540	5,930	875	473
2.....	222	180	471	1,760	1,976	*1,102	6,075	*755	391
3.....	316	155	439	1,600	1,430	1,051	4,120	715	361
4.....	279	189	361	1,130	1,070	891	3,145	731	995
5.....	267	231	319	1,070	1,130	859	2,599	*651	651
6.....	270	199	291	2,264	970	755	2,240	617	563
7.....	270	155	319	1,570	970	651	*1,993	545	*484
8.....	319	155	291	1,050	920	835	1,710	635	909
9.....	340	155	319	1,070	920	779	*1,740	651	1,185
10.....	253	231	363	1,330	920	795	1,740	545	957
11.....	253	231	323	1,170	920	875	1,640	500	829
12.....	231	281	337	924	800	635	1,883	439	865
13.....	231	231	356	920	920	675	1,850	391	797
14.....	231	199	436	1,400	1,125	811	2,729	361	749
15.....	231	231	1,264	920	1,260	563	3,405	361	587
16.....	215	242	1,218	1,150	1,305	788	2,037	375	675
17.....	199	253	1,099	924	1,170	788	1,740	1,795	3,277
18.....	215	215	927	1,300	1,152	644	1,610	1,282	4,018
19.....	253	884	5,668	1,962	1,017	680	1,345	891	2,326
20.....	231	3,540	3,132	1,242	828	644	1,120	731	*2,017
21.....	231	1,350	2,336	1,215	1,125	531	1,019	635	1,394
22.....	215	954	1,630	2,060	945	490	1,075	545	1,250
23.....	231	884	1,470	7,004	909	450	2,070	590	1,043
24.....	167	764	1,230	3,020	837	450	1,570	971	*801
25.....	189	610	1,070	2,096	1,638	500	1,300	755	697
26.....	199	519	5,460	2,144	9,524	699	*1,138	563	753
27.....	253	*495	3,188	4,068	4,340	1,228	1,156	527	587
28.....	242	439	2,420	5,060	2,908	2,240	1,318	500	824
29.....	253	471	1,904	3,652	1,976	*3,600	*1,111	795	463
30.....	199	610	1,530	2,216	.....	5,188	939	699	415
31.....	199	.....	1,230	1,940	.....	*7,052	.....	545	.....
Mean....	238	507	1,352	1,955	1,631	1,251	2,112	676	1,035

\* Meter measurement.

NOTE.—Ice conditions, December 10 to 18, inclusive, January 19 to 21, inclusive, February 14 to 25, inclusive, and March 16 to 24, inclusive. Includes flow of D. & H. canal; open from October 1 to 5, inclusive; closed for winter season October 6; open from June 6 to 30.

Monthly discharge of RONDOUT CREEK AT ROSENDALE, for the nine months ending June 30, 1916

[Drainage area, 386 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF Depth in inches on drainage area
	Maximum	Minimum	Mean	Per square mile	
October.....	340	165	238	0.62	0.708
November.....	3,540	155	507	1.31	1.462
December.....	5,668	291	1,352	3.50	4.037
January.....	7,001	920	1,955	5.06	5.827
February.....	9,524	800	1,631	4.22	4.555
March.....	7,062	450	1,251	3.24	3.736
April.....	6,075	939	2,112	5.47	6.101
May.....	1,795	361	676	1.75	2.019
June.....	4,018	361	1,035	2.68	2.992

## DELAWARE RIVER DRAINAGE BASIN

### DELAWARE RIVER

#### DESCRIPTION

The headwaters of Delaware river are found in Delaware, Greene and Schoharie counties, N. Y. The East branch, which may be considered the main stream, rises at Grand Gorge in northeastern Delaware county; the West branch has its source in a small lake almost on the line of Schoharie and Delaware counties, at an elevation of 1,886 feet above sea-level; the two streams unite at Hancock; forming what is referred to as the Delaware river, while above this point the two branches are designated as East or West branch, Delaware river. From this junction point the river flows southeastward until it reaches Port Jervis, where it turns to the southwest and flows for a distance of about 40 miles along the base of the Shawangunk range until it passes through the water gap, from which point it flows in an irregular southerly direction to Trenton. Below Trenton its course is in general southwestward to Delaware bay. Between Hancock and Port Jervis it forms the dividing line between New York and Pennsylvania; south of Port Jervis it separates Pennsylvania from New Jersey and, for a few miles, Delaware from New Jersey.

The drainage area of Delaware river, measured at Philadelphia and including that of Schuylkill river, is about 10,100 square miles, of which about 2,580 square miles lie in New York, 5,720 in Pennsylvania, and 1,800 in New Jersey. The river is tidal to Trenton, which lies also at the head of navigation.

The Delaware receives a number of important tributaries, among which may be mentioned Mongaup and Neversink rivers and Callicoon creek from New York; Lackawaxen, Lehigh and Schuylkill rivers and numerous creeks from Pennsylvania; and Rancocas creek, Musconetcong river and Maurice river from New Jersey.

**EAST BRANCH OF DELAWARE RIVER AT FISH EDDY**

**Location.**—At the highway bridge near New York, Ontario and Western railway station at Fish Eddy, Delaware county,  $5\frac{1}{2}$  miles above the confluence of the East and West branches of the Delaware river at Hancock.

**Records available.**—November 19, 1912, to June 30, 1916.

**Drainage area.**—790 square miles. (Measured on post-route map.)

**Gage.**—Vertical staff, in two sections.

**Control.**—Coarse gravel; apparently permanent.

**Discharge measurements.**—At low stages, made by wading; at high stages, from the highway bridge.

**Winter flow.**—Discharge relation seriously affected by ice. Flow determined by frequent discharge measurements and climatological data.

**Extremes of discharge.**—Current period: Maximum stage recorded, 11.8 feet at 7:00 A. M., April 12; discharge, 16,600 second-feet. Minimum stage recorded, 2.53 feet at about 4:00 P. M., November 1 and 8; discharge, 448 second-feet. It is estimated that the discharge was 350 second-feet on February 21. The relation between gage height and discharge was affected by ice at this time.

1912–1916: Maximum stage recorded, 17.4 feet during the afternoon of March 27, 1913, determined by leveling from flood-marks; approximate discharge, 33,500 second-feet. Minimum stage recorded, 1.64 feet at 5 P. M., October 12, 14 and 15, 1914; discharge, 97 second-feet.

**Accuracy.**—Discharge rating curve fairly well defined.

**Coöperation.**—Established and maintained by the United States Geological Survey in coöperation with the State Engineer and Surveyor.

Discharge measurements of EAST BRANCH OF DELAWARE RIVER AT FISH EDDY,  
during the nine months ending June 30, 1916

DATE	Made by	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>
Jan. 21.....	E. D. Burchard.....	69.20	1,380
Feb. 19 <i>a</i> .....	O. W. Hartwell.....	67.27	398
Feb. 29.....	E. D. Burchard.....	65.18	2,650
Mar. 17.....	E. D. Burchard.....	67.20	1,090
Mar. 29.....	E. D. Burchard.....	7.05	5,830
April 2.....	E. D. Burchard.....	11.66	16,600
April 3.....	E. D. Burchard.....	8.85	9,050
May 17.....	A. H. Davison.....	3.58	1,400
May 17.....	A. H. Davison.....	3.82	1,550
June 24.....	C. C. Covert.....	3.66	1,310

*a* Measurement made under complete ice cover.

*b* Discharge relation affected by ice.

Daily gage height, in feet, of EAST BRANCH OF DELAWARE RIVER AT FISH EDDY,  
for the nine months ending June 30, 1916. James Lyons, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	3.15	2.55	3.3	4.6	8.3	4.8	9.6	5.0	3.4
2.....	3.4	2.6	3.2	5.2	6.6	4.6	11.4	4.9	3.3
3.....	3.9	2.6	3.1	5.1	6.5	4.4	8.6	4.6	3.3
4.....	3.6	2.6	3.05	4.8	5.6	4.0	8.1	4.7	4.0
5.....	3.6	2.65	3.0	4.6	5.2	3.9	7.2	4.5	3.6
6.....	3.45	2.65	2.95	5.3	5.0	3.4	7.0	4.2	3.4
7.....	4.1	2.6	2.95	5.2	4.9	3.5	7.1	4.1	3.4
8.....	3.9	2.55	2.95	4.9	4.3	3.7	6.6	4.2	3.7
9.....	3.8	2.7	2.85	4.4	4.2	3.45	6.2	4.0	3.6
10.....	3.5	2.7	2.7	4.3	4.3	3.3	5.7	3.8	3.6
11.....	3.5	2.65	2.75	4.5	4.0	3.2	5.3	3.3	3.5
12.....	3.35	2.65	3.2	4.4	3.8	3.2	6.3	3.2	3.45
13.....	3.25	2.65	4.2	4.8	.....	3.2	6.5	3.3	3.4
14.....	3.2	2.6	5.1	5.1	3.9	3.25	7.6	3.25	3.35
15.....	3.2	2.75	5.3	4.7	8.5	3.8	8.2	3.2	3.2
16.....	3.25	3.3	5.6	3.9	8.4	6.4	8.0	3.2	3.6
17.....	3.1	3.0	5.8	3.5	9.1	7.1	7.8	3.7	4.4
18.....	3.0	2.9	6.2	5.4	8.5	7.4	7.4	4.0	4.3
19.....	3.05	3.0	6.8	7.2	8.2	7.6	6.6	3.8	4.2
20.....	3.0	4.7	6.2	7.7	7.4	7.9	6.1	3.5	4.7
21.....	2.9	4.2	5.1	9.6	7.7	7.7	6.0	3.4	4.3
22.....	2.8	4.0	4.8	9.4	7.7	7.5	6.6	3.4	4.0
23.....	2.75	3.9	4.6	8.0	7.9	7.4	6.8	4.5	3.8
24.....	2.7	3.7	4.4	6.2	7.6	7.4	6.3	4.8	3.6
25.....	2.6	3.0	4.4	5.6	7.8	7.6	6.0	4.5	3.8
26.....	2.6	3.5	7.7	5.3	9.1	7.2	5.9	4.1	3.6
27.....	2.8	3.5	6.5	7.3	6.8	6.0	5.9	4.0	3.5
28.....	2.9	3.4	6.0	9.6	6.5	6.1	6.0	4.2	4.0
29.....	2.75	3.4	5.3	8.4	5.1	7.0	5.7	4.1	3.4
30.....	2.7	3.5	5.0	7.0	.....	7.2	5.2	4.0	3.3
31.....	2.6	.....	4.6	6.4	.....	9.5	.....	3.7	.....

NOTE.— Discharge relation affected by ice, December 11 to 17, January 14 to 22 and February 13 to March 27, all inclusive.



Daily discharge, in second-feet, of EAST BRANCH OF DELAWARE RIVER AT FISH EDDY,  
for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	815	458	920	2,100	8,180	2,100	11,100	2,920	1,160
2.....	1,000	480	850	2,790	4,900	1,890	15,500	2,790	1,040
3.....	1,410	480	780	2,670	4,730	1,890	8,530	2,430	1,080
4.....	1,160	480	745	2,320	3,320	1,240	7,760	2,550	1,890
5.....	1,160	505	710	2,100	2,790	1,160	6,000	2,320	1,320
6.....	1,040	505	680	2,920	2,550	780	5,620	1,990	1,160
7.....	1,590	480	680	2,790	2,430	745	5,810	1,890	1,160
8.....	1,410	458	680	2,430	1,790	1,040	4,900	1,890	1,410
9.....	1,320	530	620	1,890	1,690	815	4,230	1,790	1,320
10.....	1,080	530	530	1,790	1,790	710	3,460	1,590	1,240
11.....	1,080	505	530	1,990	1,500	650	2,920	1,160	1,160
12.....	960	505	505	1,890	1,320	650	4,390	1,080	1,160
13.....	885	505	480	2,320	1,080	650	4,730	1,160	1,160
14.....	850	480	480	1,990	885	650	7,160	1,080	1,080
15.....	850	560	505	1,410	710	780	8,600	1,040	960
16.....	885	920	590	1,080	590	1,000	8,180	1,040	1,240
17.....	780	710	745	920	505	1,040	7,760	1,410	1,080
18.....	710	650	4,230	885	458	1,000	7,160	1,790	1,890
19.....	745	710	5,260	885	398	960	5,620	1,590	1,890
20.....	710	2,210	4,230	1,080	370	920	4,560	1,240	2,320
21.....	650	1,690	2,670	1,690	350	1,280	4,560	1,160	1,890
22.....	590	1,500	2,320	9,260	370	850	5,440	1,160	1,690
23.....	560	1,410	2,100	7,560	390	815	5,810	2,210	1,410
24.....	539	1,240	1,890	4,230	480	815	4,900	2,550	1,320
25.....	480	1,160	1,890	3,320	710	850	4,390	2,320	1,410
26.....	480	1,080	6,960	2,920	9,700	1,000	4,230	1,790	1,240
27.....	590	1,080	4,730	6,190	5,080	1,690	4,230	1,690	1,160
28.....	650	1,000	3,910	11,100	4,560	4,070	4,390	1,890	1,800
29.....	560	1,000	2,920	8,390	2,550	5,620	2,910	1,790	1,080
30.....	539	1,080	2,550	5,620	.....	6,000	2,180	1,690	960
31.....	480	.....	2,100	4,560	.....	10,800	.....	1,410	.....
Mean....	856	836	1,900	3,339	2,280	1,750	5,990	1,750	1,340

NOTE.— Discharge relation affected by ice, December 11 to 17, January 14 to 22 and February 13 to March 27, all inclusive. Daily discharge given in these periods is only approximate. New rating used April 15 to May 8, inclusive, and a second new rating used, beginning July 15. A sliding correction between the two ratings used May 9 to July 14, inclusive.

Monthly discharge of EAST BRANCH OF DELAWARE RIVER AT FISH EDDY, for the  
nine months ending June 30, 1916  
(Drainage area, 700 square miles)

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF Depth in inches on drainage area	Accu- racy
	Maximum	Minimum	Mean	Per square mile		
October.....	1,590	480	856	1.08	1.24	A
November.....	2,210	468	820	1.05	1.17	A
December.....	6,960	480	1,900	2.41	2.78	B
January.....	11,100	885	3,330	4.22	4.86	B
February.....	9,700	350	2,280	2.59	3.12	C
March.....	10,800	680	1,750	2.22	2.56	C
April.....	15,500	2,920	5,990	7.57	8.45	B
May.....	2,920	1,040	1,750	2.22	2.56	B
June.....	2,320	960	1,340	1.70	1.90	B

**DELAWARE RIVER AT PORT JERVIS**

**Location.**— At the toll bridge at Port Jervis, Orange county, 6 miles below the mouth of Mongaup river and 1 mile above the mouth of Neversink river, both entering from the north.

**Records available.**— October 12, 1904, to June 30, 1916.

**Drainage area.**— 3,250 square miles. (From U. S. Geological Survey water-supply papers.)

**Gage.**— Standard chain, fastened to downstream side of bridge; read once daily. The elevation of the datum of the gage is 414.89 feet above mean sea-level.

On June 20, 1914, the chain gage was replaced by a vertical staff gage attached to the wall about 30 feet downstream from the left abutment of the bridge. A sloping staff gage extends from the foot of the vertical gage (gage height, 7.6) to a point below low water (gage height, 0.5).

**Control.**— Composed of gravel; probably permanent.

**Discharge measurements.**— Made from the highway bridge, except at low stages, when the left channel is measured by wading.

**Winter flow.**— Discharge relation is not greatly affected by ice, except during very cold winters. Ice jams sometimes occur at this station and the left channel is particularly subject to back-water from ice.

**Extremes of discharge.**— Current period: Maximum stage recorded, 12.0 feet during the night of April 1; discharge, 59,100 second-feet. Minimum stage recorded 2.28 feet at 2 P. M., December 12; discharge, 1,890 second-feet.

1904–1916: Maximum stage recorded, 16.0 feet at 8 A. M., March 28, 1914; discharge, 92,700 second-feet. Minimum stage recorded, 0.60 foot at 8 A. M., September 22 and 23, 1908; discharge, 175 second-feet.

**Accuracy.**— Conditions of flow at this point are constant and a good discharge rating curve has been developed for all stages. Careful comparison of records at this station with those obtained at Riegelsville and the two Hancock stations indicate that all the discharge data are reliable.

**Coöperation.**— Gage heights furnished by the U. S. Weather Bureau. Discharge data obtained by the U. S. Geological Survey in coöperation with the State Engineer and Surveyor.

Discharge measurements of DELAWARE RIVER AT PORT JERVIS, during the nine months ending June 30, 1916

DATE	Made by	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>
Mar. 27.....	E. D. Burchard.....	3.97	6,190
April 4.....	E. D. Burchard.....	8.62	31,200
May 19.....	A. H. Davison.....	4.20	6,950

Daily gage height, in feet, of DELAWARE RIVER AT PORT JERVIS, for the nine months ending June 30, 1916. Mrs. Bells Fuller, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	2.8	2.35	3.0	4.5	6.4	4.7	11.0	5.0	4.0
2.....	2.7	2.3	3.0	4.9	6.8	4.5	11.6	4.8	4.7
3.....	3.2	2.3	2.9	5.8	5.8	4.3	10.4	4.6	4.5
4.....	3.4	2.3	2.6	5.2	5.5	4.5	8.8	4.4	4.6
5.....	3.2	2.3	2.6	4.8	5.1	3.9	7.9	4.3	4.2
6.....	3.3	2.35	2.5	5.6	4.9	3.6	7.5	4.1	3.8
7.....	3.5	2.4	2.5	5.7	4.4	3.2	7.0	3.9	3.6
8.....	3.4	2.45	2.5	4.7	3.8	3.3	6.7	3.9	4.0
9.....	3.2	2.3	2.6	4.6	3.8	3.4	6.2	4.3	4.6
10.....	3.0	2.4	2.6	4.4	3.8	3.4	6.0	4.0	4.2
11.....	2.9	2.3	2.4	4.2	3.7	3.3	5.8	3.8	4.0
12.....	2.8	2.35	2.3	4.4	3.6	3.2	5.6	3.5	4.1
13.....	2.8	2.35	2.4	4.2	3.6	3.2	6.4	3.4	4.0
14.....	2.7	2.35	2.4	4.4	2.9	3.4	7.2	3.2	3.8
15.....	2.7	2.3	2.6	4.2	2.8	3.2	8.7	3.2	3.7
16.....	2.6	2.45	2.7	4.0	3.1	2.8	7.0	3.1	3.6
17.....	2.8	3.0	2.8	3.7	3.3	2.8	6.8	2.6	4.8
18.....	2.7	2.8	3.0	3.5	3.3	2.8	6.6	4.4	5.1
19.....	2.6	2.9	6.5	3.1	3.2	3.2	5.3	4.2	4.6
20.....	2.6	4.8	6.1	3.2	3.1	3.1	5.7	3.9	4.6
21.....	2.7	4.3	5.1	3.5	2.9	3.1	5.3	3.8	4.5
22.....	2.7	4.1	4.7	3.7	2.5	3.0	5.3	3.5	4.2
23.....	2.6	3.8	4.3	8.0	2.9	2.9	5.6	3.6	4.0
24.....	2.4	3.5	4.3	6.2	3.0	2.9	5.9	4.8	3.8
25.....	2.3	3.4	4.3	6.8	3.2	3.0	5.6	4.4	3.6
26.....	2.35	3.3	4.3	6.4	7.2	3.2	5.3	4.2	3.8
27.....	2.4	3.2	7.0	6.2	8.1	3.8	5.7	4.9	3.6
28.....	2.6	3.2	6.0	8.1	6.4	4.8	6.4	3.8	3.7
29.....	2.5	3.1	5.7	8.0	5.6	6.1	5.9	4.7	3.6
30.....	2.45	3.1	4.9	6.5	.....	8.0	5.4	4.5	3.4
31.....	2.4	.....	4.7	6.0	.....	10.4	.....	4.2	.....

NOTE.— Discharge relation affected by ice, December 13 to 17 and February 11 to 21, both inclusive.

Daily discharge, in second-feet, of DELAWARE RIVER AT PORT JERVIS, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	2,890	2,010	3,340	7,890	16,800	8,660	50,900	9,840	6,010
2.....	2,680	1,920	3,340	9,460	19,200	7,890	55,800	9,010	8,600
3.....	3,830	1,920	3,110	13,500	13,500	7,160	46,000	8,200	7,810
4.....	4,360	1,920	2,480	10,700	12,100	7,890	33,500	7,430	8,200
5.....	3,830	1,920	2,480	9,060	10,300	5,820	26,800	7,060	6,700
6.....	4,090	2,010	2,290	12,600	9,460	4,920	23,900	6,350	5,360
7.....	4,640	2,100	2,290	13,000	7,520	3,830	20,500	5,690	4,750
8.....	4,360	2,200	2,290	8,660	5,510	4,090	18,600	5,680	6,010
9.....	3,830	1,920	2,480	8,270	4,640	4,360	15,700	7,060	8,200
10.....	3,340	2,100	2,480	7,520	3,830	4,360	14,600	6,010	6,700
11.....	3,110	1,920	2,100	6,810	3,340	4,090	13,600	5,360	6,010
12.....	2,890	2,010	1,920	7,520	3,110	3,830	12,600	4,460	6,350
13.....	2,890	2,010	1,840	6,810	2,680	3,830	16,800	4,180	6,010
14.....	2,680	2,010	1,840	7,520	2,480	4,360	21,800	3,650	5,360
15.....	2,680	1,920	1,920	6,810	2,480	3,830	32,700	3,650	5,060
16.....	2,480	2,200	2,100	6,140	2,290	2,890	20,500	3,400	4,750
17.....	2,890	3,340	2,480	5,210	2,200	2,890	19,200	4,750	9,010
18.....	2,680	2,890	3,340	4,640	2,100	3,580	18,000	7,430	10,300
19.....	2,480	3,110	17,400	3,580	2,100	3,830	16,200	6,700	8,200
20.....	2,480	9,060	15,100	3,830	2,100	3,580	13,100	5,690	8,200
21.....	2,680	7,160	10,300	4,640	2,100	3,580	11,200	5,360	7,810
22.....	2,680	6,470	8,060	5,210	2,290	3,340	11,200	4,460	6,700
23.....	2,480	5,510	7,160	27,500	3,110	3,110	12,600	4,750	6,010
24.....	2,100	4,640	7,160	15,700	3,340	3,110	14,100	9,010	5,360
25.....	1,920	4,360	7,160	19,200	3,830	3,340	12,600	7,430	4,750
26.....	2,010	4,090	7,160	16,800	21,800	3,830	11,200	6,700	5,360
27.....	2,100	3,830	20,500	15,700	28,200	5,510	13,100	9,420	4,750
28.....	2,480	3,830	14,600	28,200	16,800	9,060	16,800	5,360	5,050
29.....	2,290	3,580	13,000	27,500	12,600	15,100	14,100	8,600	4,750
30.....	2,200	3,580	9,460	17,400	.....	27,500	11,600	7,810	4,180
31.....	2,100	.....	8,660	14,600	.....	46,000	.....	6,700	.....
Mean....	2,910	3,250	6,150	11,350	7,650	7,070	20,600	6,360	6,410

NOTE.—Discharge relation affected by ice, December 13 to 17 and February 11 to 21, both inclusive. Daily discharge in these periods is approximate. New rating used, beginning April 2.

Monthly discharge of DELAWARE RIVER AT PORT JERVIS, for the nine months ending June 30, 1916

[Drainage area, 3,250 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF Depth in inches on drainage area	Accu- racy
	Maximum	Minimum	Mean	Per square mile		
October.....	4,640	1,920	2,910	0.895	1.03	A
November.....	9,060	1,920	3,250	1.00	1.12	A
December.....	20,500	1,840	6,150	1.89	2.18	B
January.....	28,200	3,580	11,400	3.49	4.02	B
February.....	28,200	2,100	7,650	2.35	2.53	B
March.....	46,000	2,890	7,070	2.17	2.50	B
April.....	55,800	11,200	20,600	6.34	7.07	A
May.....	9,840	3,400	6,360	1.96	2.26	A
June.....	10,300	4,180	6,410	1.97	2.20	A

## BEAVER KILL

## BEAVER KILL AT COOKS FALLS

**Location.**—At the covered highway bridge in the village of Cooks Falls, Delaware county.

**Records available.**—July 25, 1913, to June 30, 1916.

**Drainage area.**—236 square miles. (Measured on U. S. Geological Survey topographic maps and post-route map.)

**Gage.**—Vertical staff in two sections graduated from 0.0 to 16.0.

**Control.**—Coarse gravel and boulders with left bank of solid rock; probably permanent.

**Discharge measurements.**—Made from highway bridge during high water and by wading during low water.

**Winter flow.**—Discharge relation affected by ice. Gage height observations suspended during this period.

**Extremes of discharge.**—Current period: Maximum stage recorded, 8.2 feet at 5 P. M., January 28; discharge, approximately 4,550 second-feet. Minimum stage recorded, 1.6 feet at 6 P. M., December 11; discharge, 182 second-feet.

1913-1916: Maximum stage recorded, 10.9 feet at 5 P. M., March 28, 1914; discharge, approximately 7,770 second-feet. Minimum stage recorded, 0.8 foot at 5 P. M., September 19, and from 5 P. M., October 9, to 8 A. M., October 15, 1914; discharge, 39 second-feet.

**Coöperation.**—Established and maintained by the United States Geological Survey in coöperation with the State Engineer and Surveyor.

Daily gage height, in feet, of BEAVER KILL AT COOKS FALLS, for the nine months ending June 30, 1916. J. L. Rosa, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	2.3	1.7	2.1	2.9	6.4	3.7	7.2	3.8	2.4
2.....	2.6	1.7	2.0	3.3	5.2	3.4	7.4	3.4	2.3
3.....	2.7	1.7	2.0	3.0	4.4	2.9	6.0	3.2	2.4
4.....	2.5	1.7	1.9	2.9	3.6	2.7	5.6	3.1	3.2
5.....	3.1	1.8	1.85	3.5	3.4	.....	5.0	3.0	2.6
6.....	3.4	1.75	1.8	3.6	3.5	.....	4.8	2.9	2.4
7.....	3.1	1.7	1.75	2.8	3.2	.....	5.2	2.8	2.3
8.....	2.9	1.7	1.7	2.45	2.8	.....	4.8	2.8	2.6
9.....	2.7	1.9	1.8	2.3	2.9	.....	4.4	2.7	2.3
10.....	2.6	1.85	1.7	2.05	2.7	.....	4.0	2.6	2.3
11.....	2.5	1.75	1.6	2.7	2.4	.....	3.9	2.5	2.4
12.....	2.35	1.7	1.75	2.7	2.35	.....	4.8	2.4	2.3
13.....	2.3	1.7	1.7	3.0	2.2	.....	4.6	2.4	2.2
14.....	2.25	1.7	.....	2.8	.....	.....	6.1	2.3	2.2
15.....	2.3	2.15	.....	2.35	.....	.....	5.9	2.3	2.0

Daily gage height, in feet, of BEAVER KILL AT COOKS FALLS, for the nine months ending June 30, 1916 — *Continued*

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
16	2.2	2.3		2.2			5.4	2.1	2.2
17	2.1	2.05		2.1			5.4	2.1	4.7
18	2.05	1.9	6.3				5.6	3.4	3.6
19	2.0	2.3	4.8				4.7	3.6	3.5
20	2.0	3.8	4.0				4.4	3.4	3.7
21	1.95	3.2	3.4				4.4	3.2	3.3
22	1.9	3.0	3.0	5.0			5.0	3.2	3.1
23	1.85	2.8	2.8	4.7			4.9	3.4	3.0
24	1.8	2.6	2.8	3.8			4.5	3.3	2.8
25	1.7	2.5	3.5	3.6			4.2	3.0	2.7
26	1.75	2.4	3.6	3.8		3.0	4.3	2.8	2.6
27	2.2	2.4	3.4	5.8		3.4	4.2	2.7	2.4
28	2.0	2.3	3.1	7.7	6.4	4.2	4.1	3.0	3.0
29	1.9	2.3	3.0	6.0	4.8	4.7	4.0	3.0	2.45
30	1.8	2.2	3.0	4.8		5.5	3.9	2.8	2.3
31	1.75		3.0	4.6		6.9		2.6	

NOTE.— Discharge relation probably affected by ice, December 12, to 17, January 18 to 21, February 14 to 27 and March 5 to 25, all inclusive, while gage observations were suspended.

Daily discharge, in second-feet, of BEAVER KILL AT COOKS FALLS, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1	387	208	323	605	2,880	980	3,580	1,040	421
2	490	208	293	780	1,940	830	3,760	830	387
3	525	208	293	645	1,390	605	2,560	735	421
4	455	208	263	605	930	525	2,240	690	735
5	690	235	249	880	830	455	1,800	645	490
6	830	222	235	930	880	404	1,660	605	421
7	690	208	222	565	735	371	1,940	565	387
8	605	208	208	438	565	339	1,660	565	490
9	525	263	235	387	605	308	1,390	525	387
10	490	249	208	308	525	293	1,150	490	387
11	455	222	182	525	421	278	1,090	455	421
12	404	208	170	525	404	263	1,660	421	387
13	387	208	158	645	355	263	1,590	421	355
14	371	208	170	565	308	278	2,640	387	355
15	387	339	182	404	263	293	2,480	387	208
16	355	387	222	355	222	323	2,090	323	355
17	323	308	323	323	195	339	2,090	323	1,590
18	308	263	2,800	293	170	339	2,240	630	930
19	293	387	1,660	293	147	323	1,590	930	880
20	293	1,040	1,150	278	136	339	1,390	830	990
21	278	735	830	355	114	355	1,390	735	780
22	263	645	645	1,800	114	387	1,800	785	690
23	249	565	565	1,590	114	421	1,730	830	645
24	235	490	565	1,040	126	490	1,460	780	565
25	208	455	880	930	182	565	1,270	645	525
26	222	421	930	1,040	293	645	1,330	565	490
27	355	421	830	2,400	1,150	830	1,270	525	421
28	293	387	690	4,050	2,880	1,270	1,210	645	645
29	263	387	645	2,560	1,660	1,590	1,150	645	438
30	235	355	645	1,660		2,160	1,090	565	387
31	222		645	1,520		3,310		490	
Mean	390	355	562	945	709	651	1,810	618	555

NOTE.— Discharge relation probably affected by ice, December 12 to 17, January 18 to 21, February 14 to 27 and March 5 to 25, all inclusive, while gage observations were suspended. Daily discharge in these periods is approximate.

**Monthly discharge of BEAVER KILL AT COOKS FALLS, for the nine months ending  
June 30, 1916**

[Drainage area, 236 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF	Accu- racy
	Maximum	Minimum	Mean	Per square mile	Depth in inches on drainage area	
October.....	830	208	390	1.65	1.90	B
November.....	1,040	208	355	1.50	1.67	B
December.....	2,800	158	562	2.38	2.74	B
January.....	4,050	278	945	4.00	4.61	B
February.....	2,880	114	709	3.00	3.24	B
March.....	3,310	263	651	2.76	3.15	C
April.....	3,760	1,090	1,810	7.67	8.56	A
May.....	1,040	323	618	2.62	3.02	B
June.....	1,590	293	555	2.35	2.62	B

**Discharge measurements of BEAVER KILL AT COOKS FALLS, during the nine months  
ending June 30, 1916**

DATE	Made by	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>
Mar. 28.....	E. D. Burchard.....	4.16	1,290
Mar. 28.....	E. D. Burchard.....	4.38	1,420
Mar. 29.....	E. D. Burchard.....	4.54	1,490
April 3.....	E. D. Burchard.....	5.79	2,390
April 3.....	E. D. Burchard.....	5.92	2,520
May 18.....	A. H. Davison.....	2.90	557

### WEST BRANCH, DELAWARE RIVER

A brief description of the West branch, Delaware river, will be found in the description of the Delaware river.

#### WEST BRANCH OF DELAWARE RIVER AT HALE EDDY

**Location.**—At highway bridge, 400 feet west of the Erie railroad station in the village of Hale Eddy, Delaware county, 8 miles above junction with East branch at Hancock, 3 miles below the power dam of the Deposit Electric Company.

**Records available.**—November 15, 1912, to June 30, 1916.

**Drainage area.**—611 square miles. (Measured on post-route map.)

**Gage.**—A vertical staff gage in four sections.

**Control.**— Coarse gravel and boulders, about three-fourths mile below the gage and apparently permanent. Between the control and the gage there is low land behind the left bank which is overflowed by extreme high water.

**Discharge measurements.**— Made by wading across three channels above the bridge or one below in low water. High-water measurements made from highway bridge.

**Winter flow.**— Discharge relation seriously affected by ice. Flow determined by frequent discharge measurements and climatology data.

**Extremes of discharge.**— Current period: Maximum stage recorded, 12.6 feet at 8 A. M., April 2; discharge, approximately 17,400 second-feet. Minimum stage recorded, 2.00 feet at 5 P. M., October 1; discharge, 165 second-feet.

1912-1916: Maximum stage recorded, 15.3 feet at 5 P. M., March 27, 1913; discharge, approximately 25,000 second-feet. Minimum stage recorded, 1.0 foot at 6 P. M., September 21, 1913; discharge, 34 second-feet.

The observer states that on October 10, 1893, the water rose to an elevation indicated by a nail in a tree near the gage. This nail is at gage height 20.3. There are no data available indicating whether the present rating table is applicable to this gage height.

**Accuracy.**— Discharge rating curve fairly well defined. Good conditions for meter measurements.

**Coöperation.**— Established and maintained by the United States Geological Survey in coöperation with the State Engineer and Surveyor.

Discharge measurements of WEST BRANCH OF DELAWARE RIVER AT HALE EDDY, during the nine months ending June 30, 1916

DATE	Made by	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>
Jan. 18.....	E. D. Burchard.....	d 3.10	625
Feb. 18 a.....	O. W. Hartwell.....	d 4.59	554
Feb. 28.....	E. D. Burchard.....	d 4.59	1,900
Mar. 16.....	E. D. Burchard.....	d 4.90	481
Mar. 30.....	E. D. Burchard.....	8.40	6,970
Mar. 31.....	E. D. Burchard.....	9.90	10,000
Mar. 31.....	E. D. Burchard.....	9.84	9,760
Mar. 31 b.....	E. D. Burchard.....	12.00	15,600
Mar. 31.....	E. D. Burchard.....	11.09	12,400
April 1.....	F. D. Burchard.....	10.05	10,000
April 5.....	E. D. Burchard.....	7.11	4,640
May 16 c.....	A. H. Davison.....	3.11	663

a Measurement made under complete ice cover.

b Measurement made by timing debris over a 250-foot course.

c Measurement made by wading 200 feet above gage.

d Discharge relation affected by ice.



Daily gage height, in feet, of WEST BRANCH OF DELAWARE RIVER AT HALE EDDY, for the nine months ending June 30, 1916. William Seeley, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	2.05	2.35	2.85	4.7	7.2	4.4	10.2	4.6	3.4
2.....	2.45	2.3	2.75	5.5	6.0	4.2	12.3	4.2	3.2
3.....	2.85	4.25	2.65	5.9	5.4	4.0	9.0	4.1	3.4
4.....	2.65	2.2	2.6	4.9	5.0	3.8	8.5	4.2	3.8
5.....	2.85	2.25	2.55	4.8	4.6	3.5	7.2	4.0	3.5
6.....	3.4	2.35	2.5	7.0	4.4	3.4	7.0	3.8	3.6
7.....	3.1	2.2	2.55	5.6	4.2	3.4	7.0	3.8	3.4
8.....	2.85	2.25	2.85	5.0	3.6	3.4	6.4	4.5	3.8
9.....	2.7	2.3	2.5	4.2	3.6	3.3	6.1	4.0	3.8
10.....	2.6	2.3	2.4	4.2	3.6	3.3	5.6	3.7	3.6
11.....	2.55	2.3	3.2	4.6	3.3	3.2	5.4	2.6	3.8
12.....	2.55	2.2	4.8	4.3	3.3	3.2	6.2	3.4	3.8
13.....	2.4	2.2	4.8	4.2	3.2	3.2	6.8	3.2	3.6
14.....	2.35	2.25	4.8	4.8	3.0	3.2	7.8	3.1	3.5
15.....	2.45	2.5	4.6	3.6	5.1	3.6	8.0	3.1	3.4
16.....	3.7	2.9	4.5	3.5	4.8	5.0	7.0	3.1	3.6
17.....	2.95	2.85	4.4	3.5	4.8	4.2	6.7	4.0	4.2
18.....	2.8	2.65	5.5	3.1	4.8	4.6	7.0	4.6	3.4
19.....	2.75	2.8	6.6	2.95	4.6	4.4	6.2	4.0	3.6
20.....	2.85	3.4	6.0	3.1	4.4	4.4	5.6	3.8	3.8
21.....	2.85	3.4	5.0	3.2	4.5	4.0	5.4	3.7	3.7
22.....	2.75	3.4	4.5	5.8	4.7	3.7	5.6	3.6	3.6
23.....	3.6	3.2	4.6	7.9	4.6	4.0	6.2	5.0	3.3
24.....	3.5	3.2	4.2	5.6	4.6	3.8	5.7	4.6	3.1
25.....	2.45	3.1	4.0	5.3	4.8	3.6	5.6	4.2	3.2
26.....	2.4	3.0	7.6	5.6	6.6	3.6	5.5	3.9	3.4
27.....	2.5	3.0	7.4	6.4	.....	4.2	5.6	3.7	3.2
28.....	2.6	2.95	6.4	7.6	4.6	5.8	5.6	4.0	3.4
29.....	2.45	2.9	5.8	7.2	4.4	7.6	5.3	3.8	3.2
30.....	2.4	2.95	5.0	5.7	.....	8.3	4.8	3.6	2.8
31.....	2.35	.....	4.5	5.6	.....	10.6	.....	3.6	.....

NOTE.—Discharge relation affected by ice, December 11 to 17, January 16 to 21, February 15 to 25 and February 29 to March 27, all inclusive.

Daily discharge, in second-feet, of WEST BRANCH OF DELAWARE RIVER AT HALE EDDY, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	182	302	552	1,820	4,420	1,330	10,600	1,870	855
2.....	245	280	498	2,510	3,010	1,160	16,500	1,510	720
3.....	552	280	445	2,910	2,420	925	8,000	1,420	855
4.....	445	240	420	1,980	2,040	785	7,060	1,510	1,160
5.....	552	260	395	1,900	1,740	600	4,880	1,330	925
6.....	880	260	370	4,160	1,580	605	4,580	1,160	1,000
7.....	700	240	395	2,610	1,420	530	4,580	1,160	855
8.....	552	260	395	2,060	1,000	455	3,740	1,780	1,160
9.....	470	290	370	1,420	1,000	410	3,370	1,330	1,160
10.....	420	280	326	1,420	1,000	365	2,820	1,080	1,000
11.....	395	290	302	1,740	820	325	2,620	1,000	1,160
12.....	395	240	280	1,500	820	305	3,490	855	1,160
13.....	325	240	260	1,420	760	285	4,280	720	1,000
14.....	302	260	280	1,900	640	285	5,840	660	925
15.....	348	370	200	1,000	610	358	6,180	660	855
16.....	1,070	580	185	880	610	480	4,580	680	1,000
17.....	610	552	185	760	640	455	4,140	1,330	1,510
18.....	525	445	2,510	640	700	420	4,580	1,870	855
19.....	498	525	3,680	525	525	410	3,490	1,330	1,000
20.....	552	880	3,010	552	420	358	2,820	1,160	1,160

Daily discharge, in second-feet, of WEST BRANCH OF DELAWARE RIVER AT HALE EDDY, for the nine months ending June 30, 1916 — *Continued*

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
21.....	552	880	2,060	640	498	365	2,620	1,080	1,080
22.....	498	880	1,660	2,810	610	345	2,820	1,000	1,000
23.....	420	760	1,740	5,370	580	325	3,490	2,230	785
24.....	370	760	1,420	2,610	580	325	2,920	1,870	660
25.....	348	700	1,280	2,330	640	365	2,820	1,510	720
26.....	325	640	4,950	2,610	4,000	555	2,720	1,240	855
27.....	370	640	4,680	3,450	2,500	1,000	2,820	1,080	720
28.....	420	610	3,450	4,950	1,870	8,030	2,820	1,330	855
29.....	348	580	2,810	4,420	1,690	5,520	2,520	1,160	720
30.....	325	610	2,060	2,710	.....	6,700	2,050	1,000	505
31.....	302	.....	1,660	2,610	.....	11,600	.....	1,000	.....
Mean....	464	470	1,380	2,200	1,350	1,330	4,520	1,250	940

NOTE.—Discharge relation affected by ice, December 11 to 17, January 16 to 21, February 15 to 25 and February 29 to March 27, all inclusive. Daily discharge given for these periods is approximate. New rating used, beginning February 26.

Monthly discharge of WEST BRANCH OF DELAWARE RIVER AT HALE EDDY, for the nine months ending June 30, 1916

[Drainage area, 611 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF	Accuracy
	Maximum	Minimum	Mean	Per square mile	Depth in inches on drainage area	
October.....	1,070	182	464	0.759	0.88	A
November.....	880	240	479	0.789	0.86	A
December.....	4,950	165	1,380	2.26	2.61	B
January.....	5,370	525	2,200	3.60	4.15	B
February.....	4,420	420	1,350	2.21	2.38	C
March.....	11,600	285	1,330	2.18	2.51	C
April.....	16,500	2,050	4,520	7.40	8.26	A
May.....	2,230	660	1,250	2.05	2.36	A
June.....	1,510	505	940	1.54	1.72	A

## SUSQUEHANNA RIVER DRAINAGE BASIN

### DESCRIPTION

Susquehanna river rises in Otsego lake, in northern Otsego county, at an elevation of 1,193 feet above tide, and flows in a general southerly direction into Chesapeake bay. Its course is in many places extremely tortuous, crossing the state boundary between New York and Pennsylvania three times. The entire length of the river is about 500 miles and it drains an area of 27,400 square miles, of which 21,060 square miles lie in Pennsylvania, 6,080 in New York and 260 in Maryland.

Three important streams contribute to the flow in New York state — Unadilla, Chenango and Chemung rivers. These streams all enter from the north. Unadilla, the smallest, joins the main stream near Sidney, Chenango at Binghamton and Chemung at a point in Pennsylvania about 8 miles below the state line.

The topography of the basin varies widely in character. In New York the stream and its tributaries flow through a rolling and, in places, rather broken country, bounded on the north by a mountainous area. In this part of its course its bed is of gravel or sand, with rock ledges here and there, and its banks are moderately high and not extensively subject to overflow. In Pennsylvania the river enters a mountain region, its banks are high and it winds and twists among the parallel ranges in a bed composed generally of drift materials, gravels, sand and boulders. In the lower part of its course, from Marietta to Havre de Grace, it occupies a broad, deep valley, ranging in width from a few hundred feet to more than a mile, and is for the most part bounded on either shore by rocky bluffs and table-lands elevated from 100 to 500 feet above its waters.

## SUSQUEHANNA RIVER

### SUSQUEHANNA RIVER AT CONKLIN

**Location.**— At the highway bridge just below the village of Conklin, Broome county, 8 miles above the mouth of the Chenango river at Binghamton and 5 miles below the mouth of Big Snake creek.

**Records available.**— November 13, 1912, to June 30, 1916.

**Drainage area.**— 2,350 square miles.

**Gage.**— Staff gage, with a vertical section bolted to the left abutment of the bridge, and below this an inclined section flush with the bed of the stream. During September, 1914, a Stevens water-stage recorder was installed. It is located in a 5 x 6-foot wooden house over a 2½ x 6-foot float well. The well is connected with the river by a 4-inch pipe.

**Control.**— Coarse gravel and boulders.

**Discharge measurements.**— Made from the bridge at high and medium stages and by wading at low stages.

**Winter flow.**— Discharge relation affected by ice during extreme cold weather. Flow determined by frequent discharge measurements and climatologic data.

**Extremes of discharge.**— Current period: Maximum stage from water-stage recorder, 16.48 feet at 5:30 A. M., April 2; discharge, 42,100 second-feet. Minimum stage from water-stage recorder, 3.28 feet at noon, December 14; discharge, 1,130 second-feet.

1901-1916: Maximum stage recorded, 19.74 feet at the former station in Binghamton, at 7:40 A. M., March 2, 1902; discharge, approximately 62,500 second-feet. Minimum stage recorded, 1.32 feet at 8:20 A. M. and 4 P. M., September 16, 1913; discharge, 106 second-feet.

**Accuracy.**— Discharge rating curve well defined. Conditions for meter measurements are good.

**Coöperation.**— Station established and maintained by the United States Geological Survey in coöperation with the State Engineer and Surveyor.

Daily gage height, in feet, of SUSQUEHANNA RIVER AT CONKLIN, for the nine months ending June 30, 1916. Mrs. Cora Ames, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	3.5	4.05	4.3	6.3	8.4	.....	15.0	6.1	4.55
2.....	3.7	4.0	4.2	7.4	8.4	.....	16.4	5.75	4.25
3.....	4.2	.....	4.1	8.9	7.3	.....	16.1	5.5	4.55
4.....	4.4	.....	4.05	8.3	6.4	5.7	14.2	5.5	5.1
5.....	4.4	.....	4.0	7.6	5.8	.....	11.6	5.55	4.95
6.....	5.4	3.95	3.95	9.0	5.9	.....	10.6	5.25	4.65
7.....	5.35	4.1	3.8	9.8	5.8	.....	10.4	5.05	4.6
8.....	4.85	3.95	3.7	8.3	5.45	.....	9.8	5.25	4.95
9.....	4.5	.....	3.7	7.1	6.0	.....	9.0	5.45	4.9
10.....	4.3	.....	3.55	6.5	.....	.....	8.4	5.5	4.95
11.....	4.15	.....	3.6	6.6	.....	5.0	8.1	5.1	4.9
12.....	4.0	.....	3.55	6.4	.....	.....	8.6	4.8	5.0
13.....	4.0	3.65	3.42	6.1	4.5	.....	9.5	4.45	4.8
14.....	3.85	.....	3.35	6.5	4.45	4.65	10.4	4.3	4.5
15.....	3.95	.....	3.41	.....	4.25	4.85	10.8	4.2	4.25
16.....	6.3	4.5	3.45	.....	4.4	5.1	10.2	4.1	4.65
17.....	5.8	4.6	3.65	4.85	4.4	5.1	9.3	4.9	5.0
18.....	5.05	.....	5.15	4.85	4.45	5.65	9.0	7.3	4.7
19.....	4.8	.....	7.2	4.85	4.65	.....	8.8	7.0	4.7
20.....	5.1	.....	7.1	5.05	4.5	.....	7.9	6.2	4.95
21.....	5.35	.....	6.6	4.85	4.8	.....	7.4	5.7	5.0
22.....	5.0	.....	6.0	6.2	4.85	4.4	7.8	5.25	4.75
23.....	4.7	.....	5.6	9.3	4.55	4.3	8.6	5.55	4.5
24.....	4.5	.....	5.4	9.5	4.55	4.2	8.6	6.2	4.2
25.....	4.3	4.7	5.5	8.2	4.7	4.05	8.1	5.85	4.0
26.....	4.2	4.5	8.8	7.6	7.1	4.35	7.7	5.35	4.0
27.....	4.2	4.5	9.8	8.5	7.7	5.75	7.9	4.95	3.95
28.....	4.4	4.45	8.6	9.8	.....	8.2	7.8	5.1	3.95
29.....	4.3	4.35	7.7	9.6	.....	9.4	7.2	5.15	3.9
30.....	4.15	4.3	7.1	8.1	.....	11.2	6.6	4.8	3.9
31.....	4.1	.....	6.6	7.3	.....	14.3	.....	4.7	.....

NOTE.— Discharge relation affected by ice, January 14 to 20 and February 10 to March 25, both inclusive.

Daily discharge, in second-feet, of SUSQUEHANNA RIVER AT CONKLIN, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	1,350	2,000	2,360	6,170	11,300	3,330	25,000	5,720	2,750
2.....	1,570	1,940	2,210	8,760	11,300	2,830	41,800	4,950	2,280
3.....	2,210	e 1,880	2,070	12,600	8,520	2,510	40,300	4,430	2,750
4.....	2,510	e 1,810	2,000	11,000	6,400	2,360	31,500	4,430	3,680
5.....	2,510	e 1,750	1,940	9,240	5,060	2,280	21,100	4,530	2,430
6.....	4,230	1,880	1,880	12,800	5,280	2,210	17,700	3,950	2,910
7.....	4,140	2,070	1,690	15,200	5,060	2,280	17,100	3,590	2,830
8.....	3,240	1,880	1,570	11,000	4,330	2,510	15,200	3,950	3,420
9.....	2,670	.....	1,570	8,040	5,500	2,590	12,800	4,330	3,330
10.....	2,360	.....	1,400	6,630	2,910	2,510	11,300	4,430	2,420
11.....	2,140	.....	1,460	6,860	2,670	2,440	10,500	3,680	3,330
12.....	1,940	.....	1,400	6,400	2,440	2,210	11,800	3,160	3,500
13.....	1,940	1,520	1,270	5,720	2,360	2,070	14,300	2,590	3,160
14.....	1,750	e 1,570	1,230	5,810	2,280	2,000	17,100	2,360	2,670
15.....	1,880	e 1,940	1,260	4,640	2,280	1,940	18,400	2,210	2,280
16.....	6,170	2,670	1,300	3,500	2,510	1,940	16,400	2,070	2,910
17.....	5,060	2,830	1,520	2,910	2,510	1,880	13,700	3,330	3,500
18.....	3,590	.....	3,770	2,510	2,510	1,880	12,800	8,520	2,990
19.....	3,160	.....	8,280	2,400	2,440	1,810	12,300	7,800	2,990
20.....	3,680	.....	8,040	2,590	2,440	1,810	10,000	5,940	3,420
21.....	4,140	.....	6,860	3,240	2,440	1,810	8,760	4,840	3,500
22.....	3,500	.....	5,500	5,940	2,440	1,810	9,740	3,950	3,080
23.....	2,990	.....	4,640	13,700	2,360	1,810	11,800	4,530	2,670
24.....	2,670	.....	4,230	14,300	2,360	1,810	11,800	5,940	2,210
25.....	2,360	2,990	4,430	10,800	2,670	1,880	10,500	5,170	1,940
26.....	2,210	2,670	12,300	9,240	4,740	2,440	9,500	4,140	1,940
27.....	2,210	2,670	15,200	11,500	6,170	5,060	10,000	3,420	1,880
28.....	2,510	2,590	11,800	15,200	5,060	10,800	9,740	3,680	1,880
29.....	2,360	2,440	9,500	14,600	3,860	14,000	8,280	3,770	1,810
30.....	2,140	2,360	8,040	10,500	.....	19,700	6,860	3,160	1,810
31.....	2,070	.....	6,860	8,520	.....	31,900	.....	2,990	.....
Mean....	2,810	2,270	4,440	8,460	4,210	4,460	15,900	4,240	2,810

e Estimated.

NOTE.— Discharge relation affected by ice, January 14 to 20 and February 10 to March 25, inclusive. Daily discharge given during these periods is approximate. Mean discharge estimated as follows: November 9 to 12, 1,630 second-feet; November 18 to 21, 2,860 second-feet.

Monthly discharge of SUSQUEHANNA RIVER AT CONKLIN, for the nine months ending June 30, 1916

[Drainage area, 2,350 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF Depth in inches on drainage area	Accu- racy
	Maximum	Minimum	Mean	Per square mile		
October.....	6,170	1,350	2,810	1.20	1.38	A
November.....	.....	1,570	2,270	0.966	1.08	B
December.....	15,200	1,230	4,440	1.89	2.18	A
January.....	15,200	2,400	8,460	3.60	4.15	A
February.....	11,300	2,280	4,210	1.79	1.93	B
March.....	31,900	1,810	4,460	1.90	2.19	C
April.....	41,800	6,860	15,900	6.76	7.54	A
May.....	7,800	2,070	4,240	1.80	2.08	A
June.....	3,680	1,810	2,810	1.19	1.33	A

Discharge measurements of SUSQUEHANNA RIVER AT CONKLIN, during the nine months ending June 30, 1916

DATE	Made by	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>
Jan. 14 . . . . .	E. D. Burchard . . . . .	b 6.32	5,810
Jan. 19 a . . . . .	E. D. Burchard . . . . .	b 4.76	2,400
Feb. 15 . . . . .	O. W. Hartwell . . . . .	4.24	2,320
Feb. 26 a . . . . .	E. D. Burchard . . . . .	b 7.30	5,270
Mar. 14 a . . . . .	E. D. Burchard . . . . .	b 4.77	2,070
Mar. 22 a . . . . .	C. C. Covert . . . . .	b 4.41	1,830
April 8 . . . . .	A. H. Davison . . . . .	9.82	16,900
April 10 . . . . .	A. H. Davison . . . . .	8.34	11,400
May 13 . . . . .	A. H. Davison . . . . .	4.45	2,690

a Measurement made under partial ice cover at regular section.

b Discharge relation affected by ice.

## CHENANGO RIVER

### CHENANGO RIVER NEAR CHENANGO FORKS

**Location.**—Two miles by road below the village of Chenango Forks, Broome county, 1.5 miles below the mouth of Tioughnioga river and 11.5 miles above the mouth of river at Binghamton.

**Records available.**—November 11, 1912, to June 30, 1916.

**Drainage area.**—1,420 square miles.

**Gage.**—Inclined staff gage on the left bank. During September, 1914, a Stevens water-stage recorder was installed. The gage is set over a 2½ x 6-foot float well and is protected by a 5 x 6-foot wooden house. The float well is connected with the river by a 4-inch pipe.

**Control.**—Small cobble, filled in with sand and gravel; not likely to shift; current uniform across the entire section.

**Discharge measurements.**—Low-water measurements made by wading near the gage; high-water measurements made from cable and car.

**Winter flow.**—Discharge relation affected by ice. Flow determined by frequent discharge measurements and climatologic data.

**Diversions.**—In estimating the run-off, the area directly tributary to storage reservoirs, from which diversion is made to the Erie canal, has been deducted from the total natural drainage area. At the head of Chenango river there are six reservoirs aggregating 30 square miles and at the head of the Tioughnioga, one—DeRuyter—of 18.2 square miles. These areas have been subtracted from the total area of 1,468 square miles, making a net drainage area of 1,420 square miles.

**Extremes of discharge.**— Current period: Maximum stage from water-stage recorder, 12.18 feet from noon until 1 P. M., April 2; discharge, 27,900 second-feet. Minimum stage from water-stage recorder, 3.30 feet at noon, December 12; discharge, 875 second-feet.

1901-1916: Maximum stage recorded, 22.6 feet at former station in Binghamton, at 8 A. M., March 2, 1902; discharge, approximately 36,100 second-feet. Minimum stage recorded, 4.6 feet at the former station in Binghamton, at 8 A. M., August 28, 1909; discharge, 10 second-feet.

**Accuracy.**— Discharge rating curve well defined. Conditions for making meter measurements good. Small diurnal fluctuation in gage height at extreme low water.

**Coöperation.**— Established and maintained by the United States Geological Survey in coöperation with the State Engineer and Surveyor.

Daily gage height, in feet, of CHENANGO RIVER NEAR CHENANGO FORKS, for the nine months ending June 30, 1916. Erastus Ingraham, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	3.76	3.95	.....	.....	6.8	6.2	11.3	5.1	3.82
2.....	4.55	3.86	.....	6.2	6.2	5.95	12.0	5.1	3.07
3.....	5.4	3.86	.....	7.6	5.25	5.65	10.8	5.15	4.1
4.....	4.7	3.84	.....	6.6	4.8	5.5	9.3	5.05	5.05
5.....	5.0	4.05	3.71	6.2	4.65	5.3	8.3	4.6	4.45
6.....	6.0	4.35	3.68	8.2	4.65	5.15	8.3	4.35	4.15
7.....	5.35	4.1	3.65	7.4	4.55	5.2	7.9	4.3	3.92
8.....	4.85	3.93	3.63	6.15	4.3	5.3	7.3	4.3	4.0
9.....	4.55	3.95	3.65	5.55	4.05	5.25	6.8	4.35	4.2
10.....	4.4	3.97	3.57	5.35	4.2	5.2	6.5	4.2	4.15
11.....	4.3	3.82	3.54	5.2	4.0	5.15	6.35	4.0	4.55
12.....	4.1	3.75	.....	4.95	4.96	5.2	7.0	3.82	5.15
13.....	3.95	3.87	3.61	4.85	3.85	5.05	7.4	3.69	4.65
14.....	3.84	3.82	3.61	4.8	4.4	5.0	7.7	3.61	4.2
15.....	6.6	4.1	3.53	4.55	6.6	4.65	8.2	3.57	4.0
16.....	6.7	4.85	.....	4.55	6.5	4.85	7.4	3.56	4.8
17.....	5.25	4.4	.....	4.2	6.4	5.0	7.0	5.55	5.85
18.....	4.75	4.15	.....	3.98	6.25	5.0	6.8	7.1	5.0
19.....	5.35	4.2	6.2	4.1	5.75	5.05	6.45	7.0	4.9
20.....	6.1	5.3	5.65	4.05	5.45	5.0	5.9	5.2	5.45
21.....	5.3	5.2	5.25	4.0	5.55	5.05	5.95	4.75	5.0
22.....	4.85	5.1	4.9	5.1	5.55	5.0	6.7	4.5	4.85
23.....	4.55	4.85	4.7	7.3	5.5	5.0	7.5	5.5	4.5
24.....	4.35	4.65	4.55	6.4	5.45	5.0	7.1	5.65	4.3
25.....	4.2	4.5	4.55	5.8	5.65	5.15	6.45	4.85	4.05
26.....	4.1	4.4	6.6	5.85	6.8	5.3	6.1	4.5	3.92
27.....	4.3	4.35	6.8	6.7	7.1	5.9	6.05	4.25	3.75
28.....	4.25	4.3	5.75	7.7	6.5	7.4	5.95	4.45	4.55
29.....	4.15	4.2	5.3	7.0	6.3	9.5	5.6	4.25	4.4
30.....	4.15	.....	5.5	5.95	.....	9.7	5.25	4.05	3.93
31.....	4.15	.....	5.5	5.6	.....	10.4	.....	4.0	.....

NOTE.— Discharge relation affected by ice, January 13 to 20 and February 14 to March 30, inclusive. Water-stage recorder not in operation in periods of no gage height.

# GAGING OF STREAMS: SUSQUEHANNA RIVER BASIN 407

Daily discharge, in second-feet, of CHENANGO RIVER NEAR CHENANGO FORKS, for the year ending September 30, 1915

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1.....	352	279	744	.....	2,530	5,140	1,700	1,560	702	10,300	1,190	1,310
2.....	322	285	938	.....	4,440	4,440	1,590	1,710	631	7,050	3,150	1,090
3.....	297	279	1,170	.....	3,720	3,620	1,560	1,560	593	4,120	3,240	975
4.....	285	279	1,030	.....	2,970	2,970	1,460	1,380	521	4,440	8,260	888
5.....	285	261	875	.....	2,620	2,790	1,680	1,400	496	4,220	7,700	815
6.....	273	261	755	.....	2,790	2,700	1,950	1,280	446	4,330	5,500	755
7.....	261	255	692	7,700	3,520	2,530	3,720	1,090	454	2,700	5,880	755
8.....	267	261	692	16,200	3,060	2,360	4,120	1,480	430	9,400	4,900	791
9.....	279	285	724	10,600	2,530	2,030	5,620	1,840	406	17,800	5,620	900
10.....	267	291	744	6,530	2,110	2,030	6,790	1,380	390	10,000	5,020	1,680
11.....	261	297	724	4,660	2,110	1,870	8,540	1,130	382	6,010	3,810	1,330
12.....	261	303	692	4,010	2,030	1,710	9,100	975	360	7,700	3,150	988
13.....	291	309	574	7,440	2,530	1,590	6,530	938	322	6,790	3,060	2,360
14.....	279	352	504	6,140	2,620	1,620	4,550	1,060	315	5,500	2,790	7,180
15.....	261	330	.....	4,660	7,440	1,640	3,520	950	338	4,220	2,280	4,900
16.....	279	470	.....	3,810	13,800	1,590	2,970	803	487	3,340	2,440	3,720
17.....	382	888	.....	3,340	9,700	1,530	2,620	1,000	538	2,970	2,030	3,150
18.....	454	755	.....	6,270	5,880	1,410	2,280	1,270	446	2,530	1,710	2,970
19.....	414	546	.....	13,000	4,330	1,330	2,030	1,060	382	2,110	1,460	2,630
20.....	438	574	.....	11,800	3,810	1,370	1,870	875	462	1,950	1,300	2,280
21.....	438	530	.....	7,700	3,520	1,470	1,680	827	504	1,790	1,200	2,790
22.....	390	496	.....	4,660	3,340	1,410	1,470	1,640	430	1,560	2,620	3,240
23.....	352	462	.....	3,810	4,550	1,380	1,410	1,740	530	1,400	4,660	2,280
24.....	338	504	.....	3,520	12,400	1,950	1,420	1,370	682	1,230	2,790	1,810
25.....	297	530	.....	3,150	25,800	2,280	1,260	1,240	702	1,170	2,360	1,650
26.....	303	512	.....	3,060	17,400	3,810	1,160	1,200	564	1,810	1,870	1,680
27.....	291	660	.....	2,700	9,100	2,880	1,010	1,480	470	2,280	1,600	3,810
28.....	291	1,170	.....	2,360	6,530	2,360	1,040	1,270	406	2,190	1,380	2,620
29.....	279	938	.....	2,030	.....	2,440	2,030	975	368	1,870	1,380	1,950
30.....	285	779	.....	1,650	.....	2,030	1,790	839	602	1,620	1,420	1,660
31.....	285	.....	.....	1,640	.....	1,820	.....	744	.....	1,300	1,520	.....
Mean...	315	471	650	4,750	5,970	2,260	2,950	1,230	479	4,370	3,140	2,160

NOTE.—Discharge relation affected by ice, December 15 to January 6, inclusive. Mean discharge estimated, December 15 to 31, 546 second-feet; January 1 to 6, 819 second-feet. Rating revised on basis of measurements made in 1916.

Monthly discharge of CHENANGO RIVER NEAR CHENANGO FORKS, for the year ending September 30, 1915

[Drainage area, 1,420 square miles]

MONTH	DISCHARGE IN SECOND-FEET				Run-off	Accuracy
	Maximum	Minimum	Mean	Per square mile	Depth in inches on drainage area	
October.....	454	261	315	0.222	0.26	A
November.....	1,170	255	471	0.332	0.37	A
December.....	.....	.....	650	0.458	0.53	B
January.....	16,200	.....	4,750	3.34	3.85	B
February.....	25,800	2,030	5,970	4.21	4.38	B
March.....	5,140	1,330	2,260	1.59	1.83	A
April.....	9,100	1,010	2,950	2.08	2.32	A
May.....	1,840	744	1,230	0.866	1.00	A
June.....	702	315	479	0.337	0.38	A
July.....	17,800	1,170	4,370	3.08	3.55	A
August.....	8,260	1,190	3,140	2.21	2.55	A
September.....	7,180	755	2,160	1.52	1.70	A
The year.....	25,800	255	2,380	1.68	22.72	

NOTE.—Tables for 1915 given above supersede those published in Report of State Engineer for 1915, Vol. II, page 371.



**Daily discharge, in second-feet, of CHENANGO RIVER NEAR CHENANGO FORKS, for  
the nine months ending June 30, 1916**

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	1,500	1,790	1,870	4,660	7,980	2,790	24,100	3,810	1,580
2.....	c2,850	1,650	1,710	6,400	6,400	2,360	27,200	3,810	1,370
3.....	4,440	1,650	1,640	10,300	4,120	1,870	22,200	3,910	2,030
4.....	3,060	1,620	1,320	7,440	3,240	1,640	16,200	3,720	3,720
5.....	c3,640	1,950	1,420	6,400	2,970	1,340	12,400	2,880	2,620
6.....	5,880	2,440	1,380	12,100	2,970	1,300	12,400	2,440	2,110
7.....	4,330	2,030	1,340	9,700	2,790	1,410	11,200	2,360	1,740
8.....	3,340	1,760	1,310	6,270	2,360	1,790	9,400	2,360	1,870
9.....	2,790	1,790	1,340	4,780	1,950	1,790	7,980	2,440	2,190
10.....	2,530	1,820	1,230	4,330	2,190	1,790	7,180	2,190	2,110
11.....	2,360	1,580	1,190	4,010	1,870	1,710	6,790	1,870	2,790
12.....	2,030	1,480	1,200	3,520	1,810	1,640	8,540	1,580	3,910
13.....	1,790	1,660	1,280	3,060	1,640	1,640	9,700	1,400	2,970
14.....	1,620	1,590	1,280	2,620	1,640	1,560	10,600	1,280	2,190
15.....	c8,130	c2,040	1,170	2,190	1,710	1,000	12,100	1,230	1,870
16.....	7,700	c3,370	1,200	1,870	1,710	1,200	9,700	1,210	3,240
17.....	4,120	2,530	1,340	1,710	1,710	1,410	8,540	c5,590	5,500
18.....	3,150	2,110	1,790	1,680	1,640	1,340	7,980	8,820	3,620
19.....	c4,540	c2,180	6,400	1,680	1,560	1,410	7,050	8,540	3,430
20.....	6,140	c4,250	5,020	1,740	1,560	1,340	5,620	4,010	4,550
21.....	4,220	4,010	4,120	1,870	1,710	1,410	5,750	3,150	3,620
22.....	3,340	3,810	3,430	3,810	1,710	1,340	7,700	2,700	3,340
23.....	2,790	3,340	3,060	9,400	1,640	1,340	10,000	4,660	2,700
24.....	2,440	2,970	2,790	6,920	1,480	1,340	8,820	5,020	2,360
25.....	2,190	2,700	c2,800	5,380	1,870	1,560	7,050	3,240	1,950
26.....	2,080	2,530	c7,480	5,500	3,910	1,790	6,140	2,700	1,740
27.....	2,360	2,440	6,660	7,700	4,550	2,790	6,010	2,280	1,480
28.....	2,280	2,360	5,260	10,600	3,840	5,880	5,750	2,620	2,790
29.....	2,110	2,190	4,220	8,540	2,970	13,400	4,900	2,280	2,530
30.....	2,110	2,030	4,660	5,750	.....	15,800	4,120	1,950	1,760
31.....	2,110	.....	4,660	4,900	.....	20,600	.....	1,870	.....
Mean....	3,350	2,320	2,770	5,380	2,660	3,210	10,100	3,160	2,660

c Determined by discharge integration and not from mean daily gage height.

NOTE.— Discharge relation affected by ice, January 13 to 20 and February 14 to March 30, both inclusive. Daily discharge in the following periods was estimated by comparison with near-by streams: November 30 to December 4, December 12 and December 16 to 18.

**Monthly discharge of CHENANGO RIVER NEAR CHENANGO FORKS, for the nine months  
ending June 30, 1916**

[Drainage area, 1,420 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF Depth in inches on drainage area	Accu- racy
	Maximum	Minimum	Mean	Per square mile		
October.....	8,130	1,500	3,350	2.36	2.72	A
November.....	4,250	1,480	2,320	1.63	1.82	A
December.....	7,480	1,170	2,770	1.95	2.25	B
January.....	12,100	1,680	5,380	3.79	4.37	A
February.....	7,980	1,480	2,660	1.87	2.02	B
March.....	20,600	1,000	3,210	2.26	2.61	B
April.....	27,200	4,120	10,100	7.11	7.93	A
May.....	8,820	1,210	3,160	2.23	2.57	A
June.....	5,500	1,370	2,660	1.87	2.09	A

Discharge measurements of CHENANGO RIVER NEAR CHENANGO FORKS, during the nine months ending June 30, 1916

DATE	Made by	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>
Jan. 20 .....	F. D. Burchard .....	64.05	1,660
Feb. 18 <i>a</i> .....	O. W. Hartwell .....	66.78	1,960
Feb. 24 <i>a</i> .....	E. D. Burchard .....	65.40	1,380
Mar. 15 <i>a</i> .....	E. D. Burchard .....	64.83	1,210
Mar. 23 <i>a</i> .....	C. C. Covert .....	65.00	1,270
April 6 .....	A. H. Davison .....	8.34	13,100
April 7 .....	A. H. Davison .....	7.91	11,300
May 15 .....	A. H. Davison .....	3.56	1,220
May 15 .....	A. H. Davison .....	3.57	1,230
May 20 .....	A. H. Davison .....	5.19	3,990

*a* Measurement made under complete ice cover at cable section.

*b* Discharge relation affected by ice.

## CHEMUNG RIVER

### DESCRIPTION

Chemung river is formed at Painted Post, N. Y., by the confluence of Tioga and Cohocton rivers. Cohocton river lies entirely in the state of New York. Tioga river receives, just above its mouth, Canisteo river, a large tributary, which also has its drainage basin in New York to the south of Cohocton. The drainage area of Tioga river, above the Canisteo, is mainly in Pennsylvania. Chemung river flows southeastward through Corning, Elmira and Chemung, crosses the state line and flows for a short distance in Pennsylvania, then returns to New York and crosses again to Pennsylvania near Waverly, finally emptying into the Susquehanna near Athens, Bradford county, Pa. The total length of the river is about 40 miles, of which 30 miles lie in New York. The drainage area, measured at the mouth, is 2,520 square miles.

The topographic features of the basin are, as a rule, bold and broad. The hills rise to a height of several hundred feet on either side, within a short distance of the stream. The upland plateau is to a large extent wooded, has impervious soil, no lake storage and few marsh areas. Tributaries are ramifying and uniformly distributed, though not very numerous, and dry gullies, or flood channels, are common. The main river is sluggish, with low banks and a broad valley or flood plain, which is often over-

flowed. The concentration of storm waters from the three large streams, which unite just above Corning, makes possible excessive floods. Dikes have been erected in the cities of Elmira and Corning for protection. One of the highest recorded freshets in the stream occurred June 1, 1889. It was preceded by phenomenal rainfall, aggregating several inches in a few hours during the night of May 31. The discharge at this time has been estimated at 67 second-feet per square mile from 2,055 square miles, or 138,000 second-feet.\*

#### CHEMUNG RIVER AT CHEMUNG

**Location.**— About midway between Chemung, Chemung county, and Willawana, Pa., about  $\frac{1}{2}$  mile upstream from the state line and about 10 miles above the junction with the Susquehanna.

**Records available.**— September 7, 1903, to June 30, 1916.

**Drainage area.**— 2,440 square miles. (From U. S. Geological Survey water-supply papers.)

**Gage.**— Tape and weight, read twice daily; located at different points, as follows: September 7, 1903, to April 19, 1911, on the suspension bridge; April 20, 1911, to February 18, 1912, temporarily located about 250 feet upstream from the bridge while the bridge was being replaced; February 19 to December 31, 1912, gage on the new two-span steel truss bridge on the site of the old bridge; datum same for all locations of the gage.

**Control.**— Composed of sand and gravel; occasionally shifting.

**Discharge measurements.**— Made from the bridge.

**Winter flow.**— Discharge relation affected by ice. Gage observations suspended during frozen period.

**Regulation.**— Largest water-power development on the river is at Elmira, N. Y. No dams on the river between Elmira and the mouth of the Chemung.

**Extremes of discharge.**— Current period: Maximum stage recorded, 17.46 feet at 5 A. M., June 18; discharge, 63,200 second-feet. Minimum stage recorded, 2.20 feet at 7 A. M., November 14; discharge, 392 second-feet.

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\* Report of Francis Collingwood, C. E., on the protection of the city of Elmira, N. Y., against floods.

1903-1916. Maximum stage recorded, 17.46 feet at 5 A. M., June 18, 1916; discharge, 63,200 second-feet. Minimum stage recorded, 1.47 feet at 7 A. M., August 14, 1911; discharge, 49 second-feet.

**Accuracy.**— Conditions for accurate determination of discharge during the open period, only fair.

**Coöperation.**— Established and maintained by the United States Geological Survey in coöperation with the State Engineer and Surveyor.

Daily gage height, in feet, of CHEMUNG RIVER AT CHEMUNG, for the nine months ending June 30, 1916. D. L. Orcutt, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	2.34	2.95	3.2	3.7	4.7	3.45	14.3	5.6	3.9
2.....	2.75	2.9	3.05	4.8	5.0	3.2	14.0	5.1	3.6
3.....	4.2	2.8	3.0	10.5	4.0	3.2	10.0	4.7	6.9
4.....	3.6	2.75	2.9	6.8	3.45	3.15	8.8	4.7	9.6
5.....	3.35	2.75	2.8	5.9	3.35	3.05	7.6	4.8	6.7
6.....	6.2	2.75	2.75	11.1	3.6	3.05	7.1	4.4	5.6
7.....	4.4	2.75	2.6	7.3	3.5	3.15	6.5	4.2	4.9
8.....	3.9	2.7	2.75	5.7	3.45	3.2	6.3	4.1	7.4
9.....	3.6	2.65	2.7	4.9	3.15	3.5	5.9	4.0	6.9
10.....	3.3	2.65	2.55	4.6	3.3	3.9	5.6	3.9	6.4
11.....	3.15	2.55	2.44	4.5	3.25	3.8	6.0	3.7	5.8
12.....	3.0	2.55	2.7	4.3	3.1	3.8	7.1	3.5	7.9
13.....	2.85	2.55	2.75	4.1	3.05	3.6	8.2	3.3	6.4
14.....	2.75	2.32	2.7	4.3	3.2	3.6	11.5	3.2	5.5
15.....	3.45	2.55	2.9	3.45	3.4	3.6	12.2	3.15	4.9
16.....	5.2	2.6	2.95	3.15	3.35	3.8	8.3	3.15	6.2
17.....	4.1	2.7	3.1	2.9	3.25	3.8	7.0	3.0	13.6
18.....	3.7	2.7	3.15	3.35	3.2	3.9	6.3	3.7	14.5
19.....	4.4	2.75	4.2	3.45	3.2	3.8	5.6	6.3	8.8
20.....	6.7	5.1	4.0	3.8	3.3	3.6	5.1	5.4	9.2
21.....	5.1	4.8	3.35	3.45	3.15	3.6	5.7	5.0	7.2
22.....	4.5	4.3	3.2	3.5	.....	3.5	9.5	4.4	6.8
23.....	4.1	4.1	3.1	5.6	3.0	3.45	12.3	5.6	5.9
24.....	3.7	3.8	3.1	4.2	3.1	3.35	10.2	5.8	5.2
25.....	3.5	3.7	3.05	3.8	3.1	3.45	8.1	5.0	4.8
26.....	3.4	3.5	5.0	3.8	3.15	3.35	7.3	4.6	4.6
27.....	3.3	3.5	4.9	3.8	3.25	5.6	7.7	4.2	4.2
28.....	3.2	3.6	4.5	4.9	3.4	14.8	8.3	4.6	6.6
29.....	3.15	3.45	4.2	5.1	3.6	15.8	7.1	4.7	4.9
30.....	3.05	3.3	3.4	4.2	.....	14.5	6.2	4.4	4.2
31.....	3.0	.....	3.45	3.9	.....	15.5	.....	4.2	.....

NOTE.— Discharge relation affected by ice, December 12 to 25, January 14 to 22 and February 13 to March 27, all inclusive.

**Daily discharge, in second-feet, of CHEMUNG RIVER AT CHEMUNG, for the nine months ending June 30, 1916**

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1	488	990	1,250	1,900	3,600	1,090	41,700	5,300	2,140
2	808	940	1,090	3,800	4,210	808	39,900	4,240	1,730
3	2,690	850	1,040	21,880	2,360	765	20,000	3,460	8,750
4	1,760	808	940	8,900	1,560	685	15,300	3,460	18,400
5	1,430	808	850	6,330	1,430	605	11,000	3,650	8,140
6	7,150	808	808	24,200	1,760	860	9,330	2,930	5,300
7	3,040	808	685	12,000	1,620	590	7,560	2,600	3,840
8	2,200	765	808	5,370	1,560	645	7,010	2,440	10,400
9	1,760	725	765	4,000	1,200	940	6,000	2,220	8,750
10	1,370	725	645	3,410	1,370	1,370	5,300	2,140	7,290
11	1,200	645	560	3,220	1,310	1,200	6,240	1,860	5,760
12	1,040	645	530	2,800	1,140	1,140	9,880	1,600	12,000
13	895	645	502	2,520	1,040	940	13,100	1,360	7,290
14	808	474	488	1,760	1,040	940	26,600	1,250	5,080
15	1,560	645	516	1,200	1,250	1,040	30,000	1,200	3,840
16	4,640	685	590	910	1,140	1,200	13,500	1,200	6,750
17	2,520	765	685	808	1,040	1,250	9,060	12,400	37,600
18	1,900	765	895	725	990	1,370	7,010	14,900	42,900
19	3,040	808	2,360	725	940	1,200	5,300	7,010	15,300
20	8,600	4,420	1,760	725	895	1,040	4,240	4,860	16,800
21	4,420	3,800	1,200	895	850	940	5,530	4,040	9,700
22	3,220	2,860	1,040	1,250	808	895	18,000	2,930	8,440
23	2,520	2,520	940	5,570	765	850	30,500	5,300	6,000
24	1,900	2,050	940	2,690	850	765	20,800	5,760	4,440
25	1,620	1,900	940	2,050	850	850	12,800	4,040	3,650
26	1,490	1,620	4,210	2,050	895	765	10,000	3,280	3,280
27	1,370	1,620	4,000	2,050	990	5,570	11,400	2,600	2,600
28	1,250	1,760	3,220	4,000	1,090	39,700	13,500	3,280	7,850
29	1,200	1,560	2,690	4,420	1,250	51,400	9,380	3,460	3,840
30	1,090	1,370	1,490	2,690	.....	42,900	6,750	2,930	2,600
31	1,040	.....	1,560	2,200	.....	49,400	.....	2,600	.....
Mean....	2,260	1,330	1,290	4,440	1,370	6,880	14,200	4,190	9,350

NOTE.— Discharge relation affected by ice, December 12 to 25, January 14 to 22 and February 13 to March 27. Daily discharge given in these periods is approximate. New rating used, beginning March 26.

**Monthly discharge of CHEMUNG RIVER AT CHEMUNG, for the nine months ending June 30, 1916**

[Drainage area, 2,440 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF Depth in inches on drainage area	Accu- racy
	Maximum	Minimum	Mean	Per square mile		
October.....	8,600	488	2,260	0.926	1.07	A
November.....	4,420	474	1,330	0.545	0.61	A
December.....	4,210	488	1,290	0.529	0.61	B
January.....	24,200	725	4,440	1.82	2.10	B
February.....	4,210	765	1,370	0.561	0.60	B
March.....	51,400	560	6,880	2.82	3.25	C
April.....	41,700	5,300	14,200	5.82	6.49	B
May.....	14,900	1,200	4,190	1.72	1.98	A
June.....	42,900	1,730	9,350	3.83	4.27	B

Discharge measurements of CHEMUNG RIVER AT CHEMUNG, during the nine months ending June 30, 1916

DATE	Made by	Gage height	Discharge
		Feet	Sec.-ft.
Dec. 20 a	C. C. Covert	c4. 15	2, 270
Jan. 17 a	E. D. Burchard	c2. 93	833
Feb. 17 a	O. W. Hartwell	c3. 28	1, 090
Feb. 23 a	E. D. Burchard	c3. 05	811
Mar. 14 b	E. D. Burchard	c3. 58	921
April 1	A. H. Davison	14. 08	40, 100
April 2	A. H. Davison	14. 30	42, 000
April 3	A. H. Davison	10. 26	21, 100
April 3	A. H. Davison	9. 88	19, 500
April 3	A. H. Davison	9. 28	17, 200
April 4	A. H. Davison	8. 72	15, 300
April 5	A. H. Davison	7. 65	11, 400
April 11	A. H. Davison	6. 27	6, 820
April 29	E. D. Burchard	7. 10	9, 390
May 10	E. D. Burchard	3. 92	2, 160
May 10	E. D. Burchard	3. 90	2, 140
June 10	E. D. Burchard	6. 08	6, 470

a Measurement made under partial ice cover.

b Measurement made under complete ice cover.

c Discharge relation affected by ice.

## ALLEGHENY RIVER DRAINAGE BASIN

### ALLEGHENY RIVER

#### DESCRIPTION

Allegheny river drains the western slopes of the Allegheny mountains in Pennsylvania and New York.

The river rises in the central part of Potter county, in northern Pennsylvania, flows in a general northwesterly direction into New York to about the central part of Cattaraugus county, where it turns and flows southwestward back into Pennsylvania. At Franklin, in Venango county, it turns and flows southeastward to the mouth of Mahoning creek, in Armstrong county, where it again bends to the southwest, and at Pittsburgh joins the Monongahela to form the Ohio. The river is about 290 miles long (map measurement) and its drainage area, which is nearly 50 per cent greater than that of the Monongahela, comprises about 11,100 square miles.

The noteworthy tributaries in New York are Oswayo, Olean and Tunugwant creeks. Oswayo and Tunugwant creeks rise in Pennsylvania. Two other important creeks—Conewango and Brokenstraw—have their sources in New York state, but are tributary to the main stream at points in Pennsylvania.

The elevation of the sources of the river is about 2,500 feet above sea-level. At Olean, N. Y., the elevation is 1,420 feet; at Franklin, Pa., the elevation is 960 feet; at Pittsburgh the elevation is 692 feet.

The basin is somewhat regular in shape, being about  $2\frac{1}{2}$  times as long as it is wide. Its northwestern boundary is, at one point, about 8 miles from Lake Erie, lying within about 40 miles of Buffalo. Below Franklin, Pa., the river flows near the western boundary of its basin. The surrounding country is made up of high hills or mountains separated by deep valleys, but west of the main river the country is less mountainous, though the surface is still rolling and hilly.

The bed of the stream is composed chiefly of gravel, ranging in size from small pebbles to cobblestones. The banks are made up of sand, gravel or clay. The area is underlaid by shales and except in stream valleys the soil has little depth.

This basin is exceptionally rich in natural resources—coal, oil, gas, limestone, glass sand and building stones, which occur in abundance.

This basin was at one time covered with timber, the principal varieties being pine and hemlock. At present, however, only light forests and brush are found at the headwaters of the tributaries, the pine and hemlock having been cut off some time ago.

The mean annual rainfall in this region is about 40 inches and the winters are severe. Snowfall is heavy in the upper part of the basin and lasts for long periods, and ice forms to a thickness of about 2 feet. The heavy ice during the spring floods is very destructive. Jams frequently occur which cause considerable damage from backwater.

Allegheny river is subject to very severe floods, which cause heavy losses to manufacturing and other interests along the river.

The fall of the main river and tributaries is comparatively large and if the stream were in a district where fuels were more expensive, it would undoubtedly be much used for power. When the price of coal advances, so that water-power can compete with steam, the water-power on this stream will be more extensively developed.

The Cuba reservoir, which feeds the Erie canal through Genesee river, lies on the divide between the Allegheny and Genesee

drainage basins. Part of the overflow from this reservoir passes into the Allegheny and the rest into the Genesee.

#### ALLEGHENY RIVER AT RED HOUSE

**Location.**—At highway bridge at Red House, Cattaraugus county, on the road leading from the Pennsylvania railroad station to the Erie railroad station; about 5 miles below Salamanca and 13 miles above the Pennsylvania state line. Conewango creek, the outlet of Chautauqua lake, enters the Allegheny in Pennsylvania.

**Records available.**—September 4, 1903, to June 30, 1916.

**Drainage area.**—1,640 square miles. (From U. S. Geological Survey water-supply papers.)

**Gage.**—Standard chain, attached to the upstream side of bridge near left-hand end; datum unchanged. Read once daily to half-tenths.

**Control.**—Coarse gravel occasionally shifting. Current good for medium and high stages; rather slow at low stages.

**Discharge measurements.**—Made from downstream side of bridge.

**Winter flow.**—Ice usually affects the relation between gage height and discharge for short periods during the winter months. Gage observations suspended during these periods.

**Regulation.**—Low-water flow may be slightly affected by the operation of several small power-plants above Salamanca. At Olean, N. Y., a wasteway from Cuba reservoir enters the river through Olean creek. This reservoir is on the divide between Oil creek, tributary to Allegheny river, and Genesee river, tributary to Lake Ontario. The stored water is commonly turned into Genesee river through the abandoned summit level of Genesee river canal, but may be diverted into Oil creek through a guard-lock at the head of the canal.

**Extremes of discharge.**—Current period: Maximum stage recorded, 12.65 feet at 6:30 P. M., March 29; discharge, 35,700 second-feet. Minimum stage recorded, 3.55 feet several times in October and November; discharge, 635 second-feet.

1903–1916: Maximum stage recorded, 12.7 feet on March 26, 1913; discharge, approximately 40,000 second-feet. Minimum



stage recorded, 2.7 feet on several days in December, 1908; discharge, approximately 100 second-feet.

**Accuracy.**—Records fairly good.

**Coöperation.**—Station established and maintained by the United States Geological Survey in coöperation with the State Engineer and Surveyor.

Discharge measurements of ALLEGHENY RIVER AT RED HOUSE, during the nine months ending June 30, 1916

DATE	Made by	Gage height	Discharge
		<i>Feet</i>	<i>Sec.-ft.</i>
Mar. 16.....	C. C. Covert.....	67.58	4,160
May 20.....	E. D. Burchard.....	6.89	7,460
May 20.....	E. D. Burchard.....	6.71	6,990

<sup>a</sup> Discharge relation affected by ice.

Daily gage height, in feet, of ALLEGHENY RIVER AT RED HOUSE, for the nine months ending June 30, 1916. W. E. Coe, Observer

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	3.55	3.6	5.4	8.0	5.6	4.7	11.7	6.2	5.4
2.....	3.65	3.7	5.1	8.1	5.7	4.25	11.4	5.8	5.4
3.....	4.6	3.65	4.7	8.7	5.6	4.7	10.6	5.7	6.0
4.....	4.15	3.8	4.45	7.7	5.4	5.4	9.9	5.8	7.4
5.....	5.2	3.8	4.4	7.6	5.2	6.5	8.6	5.6	7.2
6.....	6.4	3.8	4.1	9.4	4.2	6.6	7.8	5.4	6.7
7.....	5.9	3.6	4.3	8.2	4.3	6.5	7.2	5.0	6.4
8.....	5.2	3.6	4.15	7.8	4.6	6.5	6.6	4.9	6.1
9.....	5.0	3.6	4.2	6.7	4.5	6.8	6.2	4.9	6.9
10.....	4.9	3.55	4.25	6.2	4.4	9.7	6.0	4.8	6.6
11.....	4.5	3.6	4.0	5.7	4.2	9.0	5.9	4.6	6.8
12.....	4.3	3.8	4.0	5.8	4.05	8.7	6.4	4.55	7.7
13.....	4.2	3.95	4.0	5.7	4.0	8.3	7.0	4.4	7.6
14.....	4.1	3.9	4.1	5.7	4.1	8.1	8.2	4.2	7.3
15.....	5.3	3.9	4.05	5.3	4.0	7.8	9.5	4.65	7.4
16.....	5.4	4.0	4.05	5.4	4.1	7.5	9.8	5.8	7.6
17.....	5.5	3.9	4.2	5.3	4.1	7.4	8.4	10.3	7.4
18.....	5.2	4.3	5.3	5.5	4.0	7.3	7.6	10.7	7.0
19.....	5.6	4.3	6.8	5.6	3.9	7.2	7.3	8.0	7.2
20.....	5.7	5.6	6.1	5.5	4.05	7.2	6.9	6.9	7.5
21.....	5.4	5.8	5.4	5.6	4.0	7.2	7.0	6.6	7.4
22.....	5.3	5.6	5.3	5.8	4.0	7.1	8.3	6.3	7.0
23.....	4.9	5.7	5.0	6.6	4.0	7.2	9.4	6.4	6.2
24.....	4.4	5.6	5.0	6.2	3.95	7.2	9.3	6.3	5.7
25.....	4.35	5.8	5.0	5.6	4.3	7.3	8.6	5.8	5.1
26.....	4.15	5.7	6.9	5.6	4.4	7.4	8.1	6.1	5.1
27.....	4.2	5.8	6.6	5.6	5.6	.....	7.3	5.8	4.7
28.....	4.3	6.0	6.2	5.7	5.9	10.9	7.0	5.7	4.5
29.....	4.15	5.9	6.4	5.5	5.6	12.2	7.0	5.6	4.4
30.....	4.0	5.8	7.0	5.7	.....	12.4	6.5	5.5	4.3
31.....	3.8	.....	7.8	5.6	.....	12.0	.....	5.5	.....

NOTE.—Discharge relation affected by ice, February 13 to March 27, inclusive.

Daily discharge, in second-feet, of ALLEGHENY RIVER AT RED HOUSE, for the nine months ending June 30, 1916

DAY	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1.....	635	685	3,780	11,700	4,270	1,610	30,000	5,410	3,400
2.....	738	790	3,090	12,100	4,520	1,540	28,400	4,340	3,400
3.....	2,110	738	2,390	14,600	4,270	1,466	24,000	4,090	4,860
4.....	1,390	905	1,860	10,600	3,780	1,460	20,300	4,340	9,300
5.....	3,310	905	1,770	10,300	3,310	1,540	14,100	3,850	8,600
6.....	6,400	905	1,310	17,800	1,460	1,610	10,800	3,400	6,900
7.....	5,030	685	1,610	12,500	1,610	1,690	8,600	2,580	6,000
8.....	3,310	685	1,390	11,000	2,110	1,940	6,600	2,400	5,130
9.....	2,880	685	1,460	7,290	1,940	2,880	5,410	2,400	4,860
10.....	2,680	635	1,540	5,830	1,770	10,600	4,860	2,220	6,600
11.....	1,940	685	1,160	4,520	1,460	8,230	4,600	1,890	7,200
12.....	1,610	905	1,160	4,770	1,240	7,290	6,000	1,810	10,400
13.....	1,460	1,100	1,160	4,520	1,100	6,110	7,900	1,580	10,000
14.....	1,310	1,030	1,310	4,520	1,030	5,560	12,400	1,300	8,950
15.....	3,540	1,030	1,240	3,540	968	4,770	18,300	1,970	9,300
16.....	3,780	1,160	1,240	3,780	905	4,090	19,800	4,340	10,000
17.....	4,020	1,030	1,460	3,540	848	3,780	13,200	22,400	9,300
18.....	3,310	1,610	3,540	4,020	848	3,540	10,000	24,600	7,900
19.....	4,270	1,610	7,600	4,270	848	3,310	8,950	11,600	8,600
20.....	4,520	4,270	5,560	4,020	848	3,310	7,550	7,550	9,650
21.....	3,780	4,770	3,780	4,270	848	3,310	7,900	6,600	9,300
22.....	3,540	4,270	3,540	4,770	848	3,090	12,800	5,700	7,900
23.....	2,680	4,520	2,880	6,990	905	3,310	17,800	6,000	5,410
24.....	1,770	4,270	2,880	5,830	1,100	3,310	17,300	5,700	4,090
25.....	1,690	4,770	2,880	4,270	1,610	3,540	14,100	4,340	2,780
26.....	1,390	4,520	7,910	4,270	1,770	3,780	12,000	5,130	2,780
27.....	1,460	4,770	6,990	4,270	1,860	12,500	8,950	4,340	2,050
28.....	1,610	5,290	5,830	4,520	1,860	25,600	7,900	4,090	1,730
29.....	1,390	5,030	6,400	4,020	1,770	31,800	7,900	3,850	1,580
30.....	1,160	4,770	8,230	4,520	.....	34,200	6,300	3,620	1,440
31.....	905	.....	11,000	4,270	.....	31,800	.....	3,620	.....
Mean....	2,570	2,300	3,480	6,680	1,780	7,500	12,500	5,390	6,310

NOTE.— Discharge relation affected by ice, February 13 to March 27, inclusive. Daily discharge in this period is approximate. New rating used, beginning April 1.

Monthly discharge of ALLEGHENY RIVER AT RED HOUSE, for the nine months ending June 30, 1916

[Drainage area, 1,640 square miles]

MONTH	DISCHARGE IN SECOND-FEET				RUN-OFF Depth in inches on drainage area	Accu- racy
	Maximum	Minimum	Mean	Per square mile		
October.....	6,400	635	2,570	1.57	1.81	A
November.....	5,290	635	2,300	1.40	1.56	A
December.....	11,000	1,160	3,480	2.12	2.44	B
January.....	17,800	3,540	6,680	4.07	4.69	C
February.....	4,520	848	1,780	1.09	1.18	C
March.....	34,200	1,460	7,500	4.57	5.27	C
April.....	30,000	4,600	12,500	7.62	8.50	C
May.....	24,600	1,300	6,390	3.29	3.79	B
June.....	10,400	1,440	6,310	3.85	4.30	B

TABLE OF DISCHARGE PER SQUARE MILE

Summary of Mean Discharge, in Second-feet per Square Mile, for all River Stations for which Data are Available in this Report

STATION	Drain- age area	1915				1916				Maintained by	
		Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May		June
ST. LAWRENCE RIVER BASIN											
Cattaraugus creek at Versailles	Sq. mi. 467	1.82	1.35	2.01	3.90	0.792	4.39	4.54	2.81	1.61	U. S. G. S.
Little Tonawanda creek at London	22	0.320	0.438	1.15	3.48	0.429	4.59	4.87	2.93	2.21	U. S. G. S.
Genesee river at St. Helena	1,030	1.32	1.01	1.15	2.03	0.673	3.43	6.14	3.01	3.20	U. S. G. S.
" " at Jones bridge near Mt. Morris	1,410	1.16	0.766	1.01	2.57	0.565	3.14	6.00	3.68	2.79	U. S. G. S.
" " at Rochester	2,360	0.903	0.576	0.725	2.22	0.644	2.40	5.55	3.17	2.53	U. S. G. S.
Canaasaga creek near Dansville	167	1.14	0.689	0.719	1.89	.....	.....	4.55	2.90	2.78	U. S. G. S.
Koshequa creek near Sonyea	74	0.716	0.607	0.889	.....	.....	.....	4.42	2.30	0.984	U. S. G. S.
Candiac lake near Hemlock	12.6	0.599	0.088	0.881	2.573	0.809	1.927	4.254	3.669	2.957	R. C. E.
Oswego river at Minetto	5,091	1.447	1.070	1.227	1.992	1.425	1.424	4.317	2.259	2.044	U. S. E.
" " at new High dam	5,097	0.573	0.373	0.811	2.452	1.928	1.397	4.841	2.810	2.714	U. S. E.
Canadadigua outlet at Alloway	440	0.573	0.373	0.811	1.85	1.12	2.29	3.66	2.55	2.81	U. S. G. S.
Owasco outlet near Auburn a.	206	2.44	1.56	1.46	2.39	1.70	1.72	4.95	2.61	2.00	U. S. G. S.
Onetha river at Caughdenoy	1,377	1.61	1.49	1.88	3.42	3.00	2.39	4.73	3.31	2.87	U. S. E.
Onetha creek at Kenwood	63	0.914	0.890	0.910	1.424	1.313	2.492	1.762	1.456	1.352	U. S. G. S.
Orwell brook near Altmar	22.1	1.06	2.05	3.42	.....	.....	.....	6.24	3.54	2.27	U. S. G. S.
Black river near Boonville b.	303	1.45	1.11	1.87	3.24	2.74	2.05	7.06	4.88	1.66	U. S. G. S.
" " near Falls Mills	1,851	1.19	1.22	1.56	3.48	2.67	1.86	6.10	4.39	1.80	U. S. E.
Moose river at Moose River	370	1.38	1.41	1.65	2.89	2.54	1.45	6.38	5.27	1.52	U. S. G. S.
Middle branch of Moose river at Old Forge	51.5	2.97	2.14	0.687	1.03	2.72	1.67	4.43	5.48	1.22	U. S. G. S.
Beaver river at State dam near Beaver River	176	1.25	1.23	1.47	2.90	2.92	1.33	5.47	5.03	1.86	U. S. G. S.
Oswegatchie river near Ogdensburg	1,580	0.604	0.518	0.968	2.76	1.87	1.20	.....	.....	.....	U. S. G. S.
" " at Newton Falls	166	1.54	1.42	1.72	2.64	2.24	2.54	3.14	5.34	2.15	U. S. G. S.
Raquette river at Pierceland	723	0.664	0.649	0.946	1.62	2.35	1.81	4.22	5.70	2.59	U. S. G. S.
" " at Massena Springs	1,200	0.975	0.958	1.02	2.18	2.09	2.17	4.89	4.34	2.42	U. S. G. S.
St. Regis river at Brasher Center	621	0.760	0.884	0.871	3.03	1.69	2.05	5.45	5.24	1.60	U. S. G. S.
Deer river at Brasher Iron Works	206	0.431	0.485	0.718	.....	.....	.....	3.70	1.97	1.24	U. S. G. S.
Ausable river at Ausable Forks	444	0.673	0.745	0.734	2.04	1.91	1.24	4.26	4.12	2.28	U. S. G. S.
Saranac river near Plattsburg	607	0.619	0.713	0.619	1.48	1.54	1.39	3.39	2.65	1.71	U. S. G. S.
HUDSON RIVER BASIN											
Hudson river at North Creek	804	1.23	1.44	1.05	1.95	2.09	2.05	5.05	5.53	1.83	U. S. G. S.
" " at Thurman	1,550	0.961	0.968	0.852	1.68	2.23	2.00	5.12	4.39	1.86	U. S. G. S.
" " at Spier Falls	2,800	1.03	1.10	1.14	1.90	2.30	1.76	6.43	4.39	1.78	U. S. G. S.
" " at Crocker's Reef	2,959	0.944	1.054	1.019	1.638	1.984	1.542	0.568	3.967	1.637	U. S. E.
" " at Mechanicville, upper dam	4,500	0.955	0.904	1.472	2.222	2.247	1.960	5.092	2.967	1.539	W. V. P. & P. Co.
" " at Mechanicville, lower dam	4,570	1.03	1.07	1.69	2.16	2.41	1.84	6.27	3.84	1.69	A. E. P. C.
Cedar river near Indian Lake c.	85	1.56	2.31	.....	.....	.....	.....	12.48	8.78	3.37	U. S. G. S.

Indian river near Indian Lake.....	132	2.73	2.73	1.09	1.16	2.20	5.11	0.354	5.17	2.05	U. S. G. S.
Schoon river at Riverbank.....	534	0.820	0.706	0.866	1.30	2.02	1.72	4.83	3.56	2.04	U. S. G. S.
Secandaga river near Hope.....	494	1.42	1.46	1.73	3.20	2.19	1.90	8.26	6.07	2.02	U. S. G. S.
Secandaga river near Hadley.....	1,060	1.18	1.28	1.52	2.22	2.25	1.42	6.88	3.80	1.87	U. S. G. S.
West branch of Secandaga river at Black- bridge, near Wells.....	211	1.90	1.59	1.76	2.92	2.15	1.58	6.69	5.50	2.27	U. S. G. S.
Hoosic river near Eagle Bridge.....	512	0.959	1.07	3.28	3.46	2.75	1.83	6.09	2.48	1.32	U. S. G. S.
" " " " at Schaghticoke.....	635	0.836	0.735	2.521	2.830	2.000	1.731	4.416	1.786	0.944	U. S. G. S.
Mohawk river at Vischer Ferry dam.....	3,400	1.53	1.44	1.73	3.94	2.18	2.31	6.33	2.56	1.54	U. S. G. S.
Nine-Mile creek near Stillville.....	59	7.366	3.017	3.492	.....	.....	.....	15.525	10.119	5.458	U. S. G. S.
West Canada creek at Trenton Falls, power dam.....	375	3.25	1.76	1.93	4.00	3.78	2.57	5.27	4.72	1.71	U. S. G. S.
West Canada creek at East Bridge.....	676	3.000	1.977	2.097	4.711	3.537	2.701	6.271	5.454	1.941	U. S. G. S.
East Canada creek at Dolgeville.....	257	2.132	2.027	1.739	2.685	2.058	2.000	8.510	3.770	1.730	U. S. G. S.
Schoharie creek at Prattsville.....	236	0.92	1.26	3.72	5.05	3.80	2.64	6.16	1.95	1.33	U. S. G. S.
" " " " at Middleburg.....	532	0.718	0.906	2.284	4.462	3.237	2.342	6.154	1.712	0.846	U. S. G. S.
Alphus kill near Charlton.....	24.9	0.723	0.992	4.70	.....	.....	.....	8.07	1.50	7.35	U. S. G. S.
Esopus creek at Coldbrook.....	192	0.92	1.70	3.18	4.26	4.73	2.63	6.22	2.58	2.92	U. S. G. S.
Rondout creek at Mount Marion d.....	100	0.82	1.35	3.07	4.11	3.84	3.01	6.31	2.28	3.44	U. S. G. S.
" " " " at Lackawack.....	386	0.62	1.31	3.50	5.06	4.22	3.24	5.47	1.75	2.68	U. S. G. S.
" " " " at Rosebale.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	U. S. G. S.
DELAWARE RIVER BASIN	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	U. S. G. S.
East branch of Delaware river at Fish Eddy.....	790	1.08	1.05	2.41	4.22	2.89	2.22	7.57	2.22	1.70	U. S. G. S.
Delaware river at Port Jervis.....	3,250	0.805	1.00	1.89	3.49	2.35	2.17	6.34	1.96	1.97	U. S. G. S.
Beaver kill at Coxs Falls.....	236	1.85	1.50	2.38	4.00	3.00	2.76	7.67	2.62	2.35	U. S. G. S.
West branch of Delaware river at Hale Eddy.....	611	0.759	0.769	2.28	3.60	2.21	2.18	7.40	2.05	1.54	U. S. G. S.
SUSQUEHANNA RIVER BASIN	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	U. S. G. S.
Susquehanna river at Conklin.....	2,350	1.20	0.966	1.89	3.60	1.79	1.90	6.76	1.80	1.19	U. S. G. S.
Chenango river near Chenango Falls.....	1,420	2.36	1.63	1.95	3.79	1.87	2.26	7.11	2.23	1.87	U. S. G. S.
Chemung river at Chemung.....	2,440	0.926	5.45	0.529	1.82	0.561	2.82	5.82	1.72	3.83	U. S. G. S.
Allegheny River BASIN	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	U. S. G. S.
Allegheny river at Red House.....	1,640	1.57	1.40	2.12	4.07	1.09	4.57	7.62	3.29	3.85	U. S. G. S.

*a* An average flow of about 10 second-feet is pumped from Owaseo lake for water-supply of city of Auburn. Proportion returning to stream above gaging station not known.

*b* These figures do not include the total run-off above this station on account of diversion through Forestport feeder into Black River canal.

*c* April mean is for 15 days beginning April 16.

*d* The discharge in second-feet per square mile is not computed for this station, owing to diversion, see page 381.

U. S. G. S.—United States Geological Survey.

R. C. E.—Rochester City Engineer.

S. E.—Department of New York State Engineer.

W. Va. P. & P. Co.—West Virginia Pulp and Paper Co.

A. E. P. C.—Adirondack Electric Power Corporation.

S. P. C.—Schenectady Power Company.

B. W. S.—New York City Board of Water Supply.

Emmenation.—Oneida river at Caughdenoy, mean for August, 1915, should read 0.943, instead of 0.985, in Report of State Engineer and Surveyor for 1915, Vol. II, page 382.

## CLIMATOLOGICAL DATA

On the following pages there are published certain records of precipitation at stations throughout the state maintained either by the Department of the State Engineer, by the United States Weather Bureau in coöperation with the Department of the State Engineer, by the Board of Water Supply of New York city or by private corporations or individuals. In connection with each record acknowledgment is made when due.

Those records showing daily precipitation and located in the Barge canal zone are grouped according to the watersheds and arranged in order similar to that of the stream gaging stations.

Stations maintained by the Board of Water Supply are located in territory adjacent to present or possible future sources of water supply for New York city and are given under the headings "Catskill Watersheds," and "Watersheds at Large" and show monthly totals only.

The records are for the first half of the calendar year 1916. Similar records for the calendar year 1915 were published in the Report of the State Engineer for 1915, Vol. II. The precipitation given under any date is the amount occurring during the twenty-four hours ending at 8 A. M. of that date. Precipitation records here given are not intended to embrace all data available, but only such data collected wholly or in part by the State of New York or that is available through the efforts of others than the United States Weather Bureau, whose publications should be consulted in connection with any study made of rainfall or run-off.

## OSWEGO RIVER WATERSHED

Daily precipitation, in inches, at SOUTH GRANBY, for the six months ending June 30, 1916

1916	Jan.	Feb.	Mar.	April	May	June	1916	Jan.	Feb.	Mar.	April	May	June
1.....		0.11					16.....			*0.23		0.54	0.96
2.....	1.14	*0.01			0.12		17.....					1.61	1.24
3.....				0.10		1.30	18.....			0.17	0.11		
4.....	*0.01	*0.08	*0.09		0.27	0.20	19.....		*0.30				
5.....	0.36		*0.11				20.....		*0.06	*0.11			
6.....	0.07		*0.13				21.....	0.06			0.31		
7.....			*0.08	0.15			22.....				0.66		0.60
8.....	*0.04	*0.13			0.21	0.30	23.....	0.09	*0.12		0.20	0.74	
9.....		*0.12	*0.15			0.10	24.....				0.04		
10.....		*0.05					25.....		*0.06				0.90
11.....			*0.14		0.14	0.34	26.....		0.74		0.09		
12.....		*0.06		0.04		0.11	27.....		*0.30				
13.....	0.70	*0.06	*0.20				28.....		*0.02	0.07	0.21		0.02
14.....							29.....				0.04		
15.....	0.02			0.16	0.12		30.....						
							31.....	0.10				0.03	
Total.....								2.59	2.16	1.48	2.11	3.78	6.07

\* Snow.

## HUDSON RIVER WATERSHED

Daily precipitation, in inches, at CORINTH, for the six months ending June 30, 1916

1916	Jan.	Feb.	Mar.	April	May	June	1916	Jan.	Feb.	Mar.	April	May	June
1.....	0.80	0.25					16.....			0.30		0.13	
2.....				0.07			17.....				0.50	1.50	1.00
3.....		0.18	0.18			0.17	18.....					0.55	0.55
4.....				0.18	0.18	0.55	19.....		0.30			0.05	
5.....				0.25			20.....						0.55
6.....	0.30	0.30				0.25	21.....	0.25					
7.....			0.70				22.....						0.08
8.....					0.25		23.....	0.23		0.30	0.62	0.55	
9.....		0.22	0.60	0.14	0.06	0.12	24.....		0.20		0.24		
10.....							25.....		0.32				
11.....	0.45		0.25		0.07		26.....		1.65				0.35
12.....						0.20	27.....		0.04				
13.....	0.52		0.23				28.....				0.06		1.10
14.....		0.62		0.20			29.....					0.14	0.30
15.....			0.20	0.50			30.....						
							31.....						
Total.....								2.55	4.08	2.76	2.90	3.63	4.92

Maintained by the U. S. Weather Bureau in cooperation with this Department.

Daily precipitation, in inches, at GLENS FALLS, for the six months ending June 30, 191

1916	Jan.	Feb.	Mar.	April	May	June	1916	Jan.	Feb.	Mar.	April	May	June
1.....	....	0.12	....	....	....	....	16.....	....	....	0.60	....	0.17	....
2.....	0.07	....	....	0.04	....	....	17.....	....	0.03	....	....	0.70	0.78
3.....	0.63	0.19	0.18	....	....	0.09	18.....	....	....	....	0.05	0.57	0.03
4.....	....	....	....	....	0.15	0.47	19.....	....	0.16	....	....	0.10	0.03
5.....	....	....	....	0.38	....	....	20.....	....	....	....	....	....	0.56
6.....	0.16	0.06	....	....	....	0.13	21.....	0.03	....	0.04	....	0.03	....
7.....	....	0.16	0.70	....	....	....	22.....	....	....	....	....	....	0.07
8.....	....	....	....	....	0.22	....	23.....	0.10	....	0.36	0.47	0.30	....
9.....	....	0.18	0.55	....	0.03	0.11	24.....	....	0.18	....	0.20	....	....
10.....	....	....	....	0.02	....	....	25.....	....	0.14	....	....	....	....
11.....	0.26	....	0.16	0.04	....	0.05	26.....	....	1.58	....	....	....	0.23
12.....	....	0.07	....	....	....	0.13	27.....	....	0.10	....	0.10	....	....
13.....	0.20	0.49	0.15	....	....	....	28.....	....	....	....	....	....	1.28
14.....	0.26	0.04	....	....	....	0.07	29.....	....	....	....	....	....	....
15.....	....	....	....	0.77	....	....	30.....	....	....	....	....	0.11	....
							31.....	0.03	....	....	....	0.11	....
Total.....								1.79	3.50	2.83	2.07	2.49	4.03

Maintained by the U. S. Weather Bureau in coöperation with this Department.

Daily precipitation, in inches, at MECHANICVILLE, for the six months ending Jun  
30, 1916

1916	Jan.	Feb.	Mar.	April	May	June	1916	Jan.	Feb.	Mar.	April	May	June
1.....	....	0.10	....	....	....	....	16.....	....	....	0.43	....	....	0.01
2.....	0.57	....	0.16	0.07	....	....	17.....	T	0.01	....	....	0.94	0.13
3.....	0.30	0.18	0.03	....	....	0.14	18.....	....	....	....	0.12	0.51	0.47
4.....	....	T	....	0.11	0.17	0.16	19.....	....	0.11	....	....	0.07	0.11
5.....	0.16	....	....	0.25	....	T	20.....	....	....	....	....	0.01	0.31
6.....	0.03	....	....	....	0.03	0.26	21.....	....	T	0.09	T	....	0.34
7.....	....	0.02	0.54	....	....	....	22.....	....	....	....	....	....	....
8.....	....	....	0.01	....	0.27	....	23.....	0.11	....	0.31	0.48	0.47	0.04
9.....	....	0.03	0.72	0.05	0.20	....	24.....	....	0.03	....	0.26	T	....
10.....	T	....	0.03	0.07	....	0.04	25.....	....	0.51	....	0.03	....	0.03
11.....	T	....	....	....	....	T	26.....	....	0.81	....	T	....	0.17
12.....	....	0.07	....	0.11	....	0.06	27.....	T	....	....	....	....	....
13.....	0.44	0.27	0.01	....	....	0.17	28.....	....	T	....	0.15	....	0.89
14.....	....	0.11	....	0.07	....	T	29.....	....	....	....	T	....	....
15.....	....	....	0.24	0.77	T	0.02	30.....	....	....	....	....	0.08	....
							31.....	0.06	....	....	....	0.13	....
Total.....								1.67	2.25	2.57	2.54	2.88	3.34

Maintained by the U. S. Weather Bureau in coöperation with this Department.  
T means trace.

# CLIMATOLOGICAL DATA: PRECIPITATION RECORDS 423

Daily precipitation, in inches, at TROY, for the six months ending June 30, 1916

1916	Jan.	Feb.	Mar.	April	May	June	1916	Jan.	Feb.	Mar.	April	May	June
1.....	↑	0.23	.....	.....	.....	.....	16.....	↑	.....	0.23	↑	.....	0.33
2.....	↑	.....	0.26	↑	.....	0.13	17.....	0.01	0.01	.....	0.07	1.63	0.13
3.....	0.69	0.27	.....	0.07	.....	0.19	18.....	.....	.....	.....	0.06	0.07	0.31
4.....	.....	.....	.....	0.07	0.15	.....	19.....	.....	0.12	↑	.....	0.10	0.21
5.....	0.30	.....	↑	0.15	.....	0.24	20.....	0.01	↑	.....	.....	0.01	.....
6.....	.....	↑	.....	.....	0.06	.....	21.....	0.03	0.01	0.06	0.04	↑	.....
7.....	.....	0.03	0.55	0.06	↑	0.01	22.....	.....	.....	0.06	0.25	.....	0.06
8.....	.....	0.01	0.09	.....	0.43	0.12	23.....	↑	0.08	0.25	↑	0.42	.....
9.....	↑	0.12	0.48	↑	0.86	0.11	24.....	0.02	.....	.....	0.55	.....	.....
10.....	0.31	.....	.....	0.30	0.01	0.07	25.....	.....	0.67	.....	0.04	.....	0.32
11.....	.....	0.57	.....	.....	.....	0.09	26.....	.....	0.96	↑	.....	.....	0.01
12.....	.....	0.11	↑	0.12	.....	0.08	27.....	.....	↑	.....	.....	.....	.....
13.....	0.56	↑	0.14	.....	T	.....	28.....	.....	.....	0.10	↑	0.29	.....
14.....	.....	0.55	.....	0.63	↑	.....	29.....	.....	.....	.....	0.16	.....	.....
15.....	.....	.....	0.55	0.17	.....	0.07	30.....	.....	.....	.....	↑	.....	.....
							31.....	0.15	.....	.....	.....	0.06	.....
Total.....							2.08 3.89 2.69 2.67 3.96 2.77						

↑ Sunday or holiday; gage not read; amount, if any, included in following day.

T Means trace.

Maintained by the U. S. Weather Bureau in coöperation with this Department.

## SACANDAGA RIVER WATERSHED

Daily precipitation, in inches, at NORTHVILLE, for the six months ending June 30, 1916

1916	Jan.	Feb.	Mar.	April	May	June	1916	Jan.	Feb.	Mar.	April	May	June
1.....	.....	0.23	.....	.....	.....	.....	16.....	0.06	.....	0.26	.....	0.14	0.12
2.....	0.86	.....	0.18	0.20	.....	0.12	17.....	0.05	.....	.....	0.04	1.43	1.15
3.....	.....	0.27	0.09	.....	.....	.....	18.....	.....	.....	.....	0.06	0.52	.....
4.....	0.05	.....	.....	0.15	0.33	0.49	19.....	.....	0.22	.....	.....	0.08	0.04
5.....	.....	.....	.....	0.19	.....	.....	20.....	.....	.....	.....	.....	0.09	0.49
6.....	0.54	0.18	.....	.....	.....	.....	21.....	0.23	.....	0.08	.....	.....	.....
7.....	.....	0.25	0.86	.....	.....	.....	22.....	.....	.....	.....	.....	.....	0.05
8.....	.....	.....	0.18	.....	0.05	.....	23.....	0.28	.....	0.16	0.52	0.46	.....
9.....	.....	0.22	0.65	0.05	.....	0.65	24.....	.....	0.12	.....	0.16	0.05	.....
10.....	0.26	.....	0.32	0.05	.....	0.44	25.....	.....	0.36	.....	.....	.....	.....
11.....	0.28	.....	.....	.....	0.11	0.09	26.....	.....	1.25	.....	0.08	.....	0.18
12.....	.....	0.12	.....	0.19	.....	0.16	27.....	.....	.....	.....	.....	.....	.....
13.....	0.73	0.42	0.30	.....	.....	.....	28.....	.....	.....	.....	.....	.....	0.12
14.....	0.06	.....	.....	.....	.....	0.49	29.....	.....	.....	.....	.....	0.06	.....
15.....	.....	.....	0.21	0.70	.....	.....	30.....	.....	.....	.....	.....	.....	.....
							31.....	0.08	.....	.....	.....	0.16	.....
Total.....							3.50 3.64 3.29 2.39 3.48 4.59						

Maintained by the U. S. Weather Bureau in coöperation with this Department.



## REPORT OF STATE ENGINEER

## HOOSICK RIVER WATERSHED

Daily precipitation, in inches, at HOOSICK FALLS, for the six months ending June 30, 1916

1916	Jan.	Feb.	Mar.	April	May	June	1916	Jan.	Feb.	Mar.	April	May	June
1.....	0.12	0.23					16.....			1.44		0.06	
2.....	0.53	0.15	0.18	0.07			17.....		0.05			0.23	0.04
3.....	0.08	0.18				0.08	18.....				0.22	0.50	
4.....	0.10		T	0.03	0.13	0.20	19.....		0.16			0.30	0.28
5.....	0.11		T	0.12		0.13	20.....					T	0.50
6.....					0.04		21.....				0.07		0.08
7.....		0.02	0.21	0.09			22.....			0.30			0.05
8.....		T			0.15		23.....	0.54	0.30	0.07	0.42	0.40	
9.....		0.15	1.31	0.06	0.03		24.....				0.21		
10.....			0.12	0.05			25.....		0.18				0.06
11.....	0.05					0.16	26.....		0.71				0.32
12.....		0.02		0.14		0.15	27.....	0.11	0.01				
13.....	0.25	0.45					28.....				0.12		0.26
14.....		0.01		0.02		0.05	29.....					0.09	
15.....			0.30	0.90	T		30.....					0.07	
							31.....	0.13				0.08	
							Total.....	2.07	2.62	3.93	2.52	2.10	3.38

T means trace.

Maintained by the U. S. Weather Bureau in cooperation with this Department.

## MOHAWK RIVER WATERSHED

Daily precipitation, in inches, at GRAY, for the six months ending June 30, 1916

1916	Jan.	Feb.	Mar.	April	May	June	1916	Jan.	Feb.	Mar.	April	May	June
1.....		0.23					16.....	0.15		0.28		0.94	0.37
2.....	0.96		0.16	0.27			17.....	0.07			0.09	1.52	0.60
3.....	0.08	0.13	0.04			0.61	18.....	0.05			0.30	0.90	0.05
4.....	0.08	0.07		0.04	0.73	0.40	19.....	0.02	0.25	0.02		0.40	0.11
5.....	0.12		0.03			0.09	20.....					0.09	0.25
6.....	0.55	0.16				0.02	21.....	0.44		0.06		0.04	0.01
7.....		0.18	0.70	0.29	0.04		22.....						0.09
8.....		0.11	0.16				23.....	0.40		0.19	0.60	1.03	
9.....		0.15	0.68		0.51	0.18	24.....		0.14	0.04	0.16	0.07	
10.....	0.11		0.28			0.03	25.....		0.39				0.11
11.....	0.52	0.09	0.12		0.06	0.02	26.....		1.13				0.01
12.....		0.15		0.43			27.....		0.05				
13.....	1.01	0.32	0.53				28.....	0.11			0.11		0.74
14.....	0.04			0.04		0.97	29.....						
15.....			0.37	0.56		0.02	30.....	0.06				0.25	
							31.....						
							Total.....	4.76	3.56	3.66	2.79	6.58	4.68

Supplied by the Consolidated Water Company of Utica.

## CLIMATOLOGICAL DATA: PRECIPITATION RECORDS 425

Daily precipitation, in inches, at ADRIAN RESERVOIR, (a) NEAR UTICA, for the six months ending June 30, 1916

1916	Jan.	Feb.	Mar.	April	May	June	1916	Jan.	Feb.	Mar.	April	May	June
1.....	0.20	0.38	.....	.....	.....	.....	16.....	.....	.....	.....	.....	0.84	0.46
2.....	1.36	.....	0.12	.....	0.04	0.53	17.....	.....	0.02	.....	0.04	0.90	.....
3.....	0.06	0.18	0.05	.....	0.02	0.34	18.....	0.05	.....	.....	0.15	0.64	.....
4.....	0.12	0.02	.....	0.16	0.40	0.10	19.....	.....	0.30	0.03	0.03	0.05	.....
5.....	0.17	.....	0.15	0.05	.....	0.22	20.....	.....	0.02	0.02	0.03	0.08	0.24
6.....	0.23	0.04	0.04	0.15	0.08	.....	21.....	0.10	0.02	.....	0.18	.....	.....
7.....	0.06	0.09	0.25	.....	0.06	0.08	22.....	.....	.....	0.47	.....	.....	0.06
8.....	.....	0.06	0.05	.....	.....	.....	23.....	0.27	.....	.....	0.54	0.58	.....
9.....	0.04	0.03	0.40	0.22	0.08	.....	24.....	0.02	0.18	.....	0.13	.....	.....
10.....	.....	0.02	0.15	.....	0.09	.....	25.....	.....	0.45	.....	0.06	.....	.....
11.....	0.05	0.02	0.06	.....	.....	.....	26.....	.....	1.00	.....	.....	.....	0.38
12.....	.....	0.15	0.02	0.18	.....	.....	27.....	0.02	0.03	.....	.....	.....	.....
13.....	0.23	0.30	0.15	.....	.....	0.80	28.....	0.10	0.06	.....	0.11	.....	0.22
14.....	.....	0.16	0.35	0.30	.....	0.50	29.....	.....	0.02	.....	.....	.....	.....
15.....	.....	.....	0.32	0.19	.....	.....	30.....	.....	.....	.....	0.32	.....	.....
							31.....	0.17	.....	.....	.....	.....	.....
Total.....								3.30	2.47	2.65	2.42	4.18	3.88

a Formerly Savage reservoir.

\* Snow. § Snow and rain.

Supplied by the Consolidated Water Company of Utica.

Daily precipitation, in inches, at DEERFIELD RESERVOIR, UTICA, for the six months ending June 30, 1916

1916	Jan.	Feb.	Mar.	April	May	June	1916	Jan.	Feb.	Mar.	April	May	June
1.....	0.13	0.33	0.01	.....	.....	.....	16.....	.....	.....	.....	.....	0.74	0.56
2.....	1.06	.....	0.05	0.17	0.09	0.74	17.....	.....	0.04	.....	0.06	0.98	.....
3.....	.....	0.12	0.02	.....	0.04	0.32	18.....	0.02	.....	.....	0.06	0.58	.....
4.....	.....	.....	.....	0.08	0.46	0.11	19.....	0.01	0.10	0.05	.....	0.14	0.60
5.....	0.13	.....	0.14	0.02	.....	0.16	20.....	.....	0.02	0.05	0.01	0.11	0.23
6.....	0.30	0.02	.....	0.07	0.10	.....	21.....	0.11	0.01	.....	0.07	.....	.....
7.....	0.03	0.06	0.44	.....	.....	0.05	22.....	.....	.....	0.16	.....	.....	0.06
8.....	.....	0.02	0.10	.....	.....	.....	23.....	0.26	.....	.....	0.58	1.23	.....
9.....	0.09	0.05	0.19	0.11	0.10	.....	24.....	0.02	0.04	.....	0.17	0.02	.....
10.....	.....	0.02	0.05	0.02	0.11	.....	25.....	.....	0.36	.....	0.04	.....	0.60
11.....	.....	0.02	0.01	.....	.....	.....	26.....	.....	1.22	.....	0.01	.....	.....
12.....	.....	0.11	.....	0.05	.....	.....	27.....	.....	0.02	.....	0.04	.....	.....
13.....	0.58	0.30	0.26	.....	.....	.....	28.....	0.04	0.01	0.05	0.06	.....	0.34
14.....	.....	.....	0.29	0.10	0.62	.....	29.....	.....	.....	.....	.....	0.18	.....
15.....	.....	.....	0.18	0.25	.....	.....	30.....	.....	.....	.....	.....	.....	.....
							31.....	0.06	.....	.....	.....	.....	.....
Total.....								2.80	2.77	2.05	1.97	4.88	4.30

\* Snow. § Snow and rain.

Supplied by the Consolidated Water Company of Utica.

Daily precipitation, in inches, at GRAEFENBURG (RESERVOIR NO. 1) NEAR UTICA,  
for the six months ending June 30, 1916

1916	Jan.	Feb.	Mar.	April	May	June	1916	Jan.	Feb.	Mar.	April	May	June
1.....	*0.10	0.30	.....	.....	.....	.....	16.....	.....	.....	.....	.....	0.45	.....
2.....	*1.01	.....	.....	.....	0.09	0.30	17.....	.....	.....	.....	0.03	0.81	.....
3.....	.....	*0.06	.....	.....	.....	0.35	18.....	*0.08	.....	.....	.....	0.83	.....
4.....	0.04	.....	.....	.....	.....	0.10	19.....	.....	0.18	.....	.....	0.04	.....
5.....	0.08	.....	0.05	.....	.....	0.20	20.....	.....	.....	0.06	.....	.....	0.25
6.....	*0.16	.....	0.15	0.07	0.05	.....	21.....	0.10	.....	.....	0.19	.....	.....
7.....	*0.06	*0.09	0.50	.....	0.03	0.05	22.....	.....	.....	0.20	.....	.....	0.05
8.....	.....	*0.08	0.06	.....	.....	.....	23.....	0.25	.....	.....	.....	0.50	.....
9.....	.....	0.04	0.22	0.20	0.05	.....	24.....	.....	.....	.....	.....	.....	.....
10.....	.....	.....	0.06	.....	.....	.....	25.....	.....	0.35	.....	.....	.....	0.10
11.....	0.07	.....	0.08	.....	.....	.....	26.....	.....	0.95	.....	.....	.....	.....
12.....	.....	0.15	.....	0.12	.....	.....	27.....	.....	.....	.....	0.06	.....	.....
13.....	0.25	*	0.08	.....	.....	.....	28.....	0.07	0.02	.....	.....	.....	0.12
14.....	.....	.....	.....	0.10	.....	.....	29.....	.....	0.04	.....	.....	.....	.....
15.....	.....	.....	0.28	0.22	0.06	.....	30.....	0.10	.....	.....	.....	.....	.....
							31.....	0.15	.....	.....	.....	0.18	.....
							Total.....	2.52	2.26	1.74	0.99	3.09	1.52

\* Snow.      § Snow and rain.  
Supplied by the Consolidated Water Company of Utica.

Daily precipitation, in inches, at GENESEE ST. BRIDGE, UTICA, for the six months  
ending June 30, 1916

1916	Jan.	Feb.	Mar.	April	May	June	1916	Jan.	Feb.	Mar.	April	May	June
1.....	0.11	0.32	0.03	.....	.....	.....	16.....	0.07	.....	0.27	.....	0.80	0.50
2.....	1.06	0.01	0.21	0.20	0.11	.....	17.....	0.05	0.08	.....	0.12	0.96	0.22
3.....	0.02	0.12	0.06	.....	0.02	0.54	18.....	0.09	.....	.....	0.08	0.61	.....
4.....	0.12	0.02	0.03	0.10	0.35	0.39	19.....	.....	0.14	0.05	0.02	0.12	0.10
5.....	0.13	.....	0.15	0.08	.....	0.07	20.....	.....	0.02	0.01	0.02	0.13	0.27
6.....	.....	0.06	0.02	.....	.....	0.15	21.....	0.12	0.03	0.06	0.01	.....	0.04
7.....	.....	0.10	0.59	0.16	0.09	.....	22.....	.....	.....	.....	.....	.....	0.07
8.....	.....	0.21	0.07	.....	.....	0.04	23.....	0.22	0.09	0.31	0.76	0.68	.....
9.....	.....	0.19	0.51	0.09	0.05	0.26	24.....	0.02	0.09	.....	0.10	T	.....
10.....	0.11	0.10	0.19	0.04	.....	0.02	25.....	.....	0.32	.....	0.06	.....	0.29
11.....	0.02	0.07	0.04	.....	0.17	0.04	26.....	.....	1.51	.....	.....	.....	.....
12.....	.....	0.18	0.01	0.07	.....	0.06	27.....	T	0.13	0.02	T	.....	.....
13.....	0.52	0.40	0.25	.....	.....	0.08	28.....	0.08	0.12	.....	0.06	.....	0.37
14.....	0.09	0.01	0.03	0.17	.....	0.27	29.....	.....	0.08	.....	T	0.09	.....
15.....	.....	.....	0.45	.....	0.06	.....	30.....	.....	.....	.....	.....	.....	.....
							31.....	0.18	.....	.....	.....	0.17	.....
							Total.....	3.10	4.35	3.34	2.09	4.41	3.78

T means trace.  
Maintained by the U. S. Weather Bureau in cooperation with this Department.

## CLIMATOLOGICAL DATA: PRECIPITATION RECORDS 427

Daily precipitation, in inches, at TRIBES HILL, for the six months ending June 30, 1916

1916	Jan.	Feb.	Mar.	April	May	June	1916	Jan.	Feb.	Mar.	April	May	June
1.....		0.10	0.30				16.....					0.20	
2.....	0.10			1.00			17.....				0.10		0.75
3.....		0.10			0.21	0.45	18.....					1.87	
4.....							19.....	0.10	0.10				0.87
5.....			0.10	0.40			20.....						
6.....	0.40				0.15	0.44	21.....	0.20		0.10			
7.....			0.60				22.....	0.10					
8.....		0.20					23.....	0.60		0.70		0.57	
9.....			0.90	0.40	0.63	0.40	24.....		0.10		1.20		
10.....			0.20				25.....						
11.....	0.30					0.15	26.....		0.70				0.32
12.....		0.15					27.....		0.10				
13.....	0.40		0.50	0.30		0.38	28.....						0.90
14.....		0.65				0.20	29.....						
15.....			1.30	1.30			30.....				0.20		
							31.....					0.10	
Total.....							2.20	2.20	4.70	4.90	3.73	5.08	

Maintained by the United States Weather Bureau.

## WEST CANADA CREEK WATERSHED

Daily precipitation, in inches, at HOFFMEISTER, for the six months ending June 30, 1916

1916	Jan.	Feb.	Mar.	April	May	June	1916	Jan.	Feb.	Mar.	April	May	June
1.....	†	*0.10	*0.02	0.40			16.....	†	*T			†	†
2.....	*1.14	*0.07	*0.18				17.....	*0.27			*T	3.29	†
3.....	*0.02	*T			0.34	0.68	18.....	†	*0.22		0.18	*0.27	1.62
4.....		*T	*0.10	\$0.21			19.....	*0.16				0.18	†
5.....	0.77	*0.18	*T		0.09	T	20.....	\$0.12		*0.10			0.49
6.....		†	*0.47	\$0.25			21.....				*T		T
7.....		*0.32	†				22.....	0.30		*0.15	*†	T	T
8.....			*0.76	†	0.40		23.....	*T	*0.33		0.48	0.71	
9.....	†	*0.15	*0.72	\$0.10		†	24.....						T
10.....	\$0.62	*0.07	*0.07		0.15	0.67	25.....		1.26		T		
11.....		†		0.27			26.....		*0.08		T		
12.....	†	*0.51	*0.37				27.....	0.15			T		0.48
13.....	\$0.90		*T			0.26	28.....	*T					
14.....			*0.36	\$0.50	T		29.....				T		
15.....	*T	*T	*0.13		†	†	30.....	0.04				0.34	
							31.....	0.29					
Total.....							4.78	3.29	3.43	2.39	6.27	4.20	

\* Snow. † Snow and rain. ‡ Included in following day.  
T means trace.

Daily precipitation, in inches, at TRENTON FALLS, for the six months ending Jun 30, 1916

1916	Jan.	Feb.	Mar.	April	May	June	1916	Jan.	Feb.	Mar.	April	May	June
1.....		0.07					16.....	0.23		0.15		0.68	0.90
2.....	0.25		0.20	0.24	0.13		17.....	0.03	T		0.04	1.12	0.29
3.....	0.20	0.08	0.03			0.80	18.....	0.06	0.06		0.01		
4.....	0.02	T		0.08	0.52	0.47	19.....	0.02	0.12	T	0.15	0.37	0.19
5.....	0.05		0.10	T	T	0.10	20.....	T		T		0.25	0.39
6.....	0.15	0.18			0.07	0.11	21.....	0.08		0.09	0.06		
7.....	0.03	0.08	0.65	0.20	0.13		22.....	T		T			
8.....		0.06	0.28		0.25	0.16	23.....	T		0.18	0.13	0.93	
9.....		0.15	0.23	0.11	0.13	0.43	24.....		0.32		0.02	0.09	
10.....	0.30		0.21	T		0.04	25.....		0.25		0.06		0.05
11.....	T	0.09	T	0.12	0.14	T	26.....		0.45		0.63		0.10
12.....	T					0.15	27.....		0.03		T		0.68
13.....	0.90		0.50				28.....	0.12	0.04	0.04	0.03		
14.....	0.08			T		0.58	29.....					T	
15.....		T	0.18		T		30.....				0.06	T	
							31.....	0.18				0.20	
Total.....							2.70	1.98	2.84	1.34	5.01	5.44	

T means trace.

Maintained by the U. S. Weather Bureau in coöperation with this Department.

## CATSKILL WATERSHEDS

Stations maintained by the Board of Water Supply of New York city.

Monthly rainfall, in inches, on CATSKILL WATERSHEDS

1916	Jan.	Feb.	Mar.	April	May	June
<b>ESOPUS CREEK</b>						
Phoenicia.....	1.62	5.48	3.46	3.03	3.34	5.40
Slide Mountain.....	2.97	0.46	4.06	4.42	3.14	5.52
Highmount.....	1.44	3.82	2.92	3.66	2.44	3.70
Edgewood.....	1.83	4.56	3.17	2.95	3.52	5.00
Lake Hill.....	1.59	4.10	3.17	2.08	2.06	5.83
Overlook Mt.....	1.38	4.15	2.89	2.19	3.48	5.72
Kingston.....	1.01	3.47	3.10	2.44	3.31	4.63
West Hurley.....	1.20	4.61	3.54	2.57	4.06	4.62
Brown Station.....	1.60	4.96	3.70	2.44	3.42	5.18
Ashokan.....	1.66	4.46	3.28	2.14	3.24	5.32
Moonhaw.....	1.78	4.28	3.46	1.76	3.56	6.82
High Point.....	1.61	3.86	2.35	2.44	4.03	5.86
Zena.....	1.28	4.07	2.90	2.25	3.68	4.74
Beechford.....	1.32	3.62	3.06	2.11	3.54	5.57
<b>RONDOUT CREEK</b>						
Grahamsville.....	2.36	4.41	4.05	3.46	3.14	5.45
Bull Run.....	2.52	5.08	3.85	3.38	3.81	5.32
Peekamoose.....	2.55	5.22	4.12	3.53	4.93	7.08
Lackawack.....	1.89	5.16	3.70	3.56	3.20	5.61
Claryville.....	2.44	4.49	3.50	4.25	3.48	5.96
High Falls.....	1.74	4.92	4.34	2.86	3.38	5.41
Rosendale.....	1.48	4.78	2.61	2.58	4.08	4.28

## CLIMATOLOGICAL DATA: PRECIPITATION RECORDS 429

## Monthly rainfall, in inches, on CATSKILL WATERSHEDS — Continued

1916	Jan.	Feb.	Mar.	April	May	June
<b>SCHOHARIE CREEK</b>						
Windham .....	0.92	3.94	2.89	3.22	2.54	2.8
Haines Falls .....	0.83	4.58	2.96	2.24	4.01	5.94
Lexington .....	1.24	4.86	2.78	2.38	2.32	3.59
Prattsville .....	1.27	3.87	2.60	2.80	2.40	3.73
						3
<b>CATSKILL CREEK</b>						
Preston Hollow .....	1.31	4.01	3.42	3.28	2.67	3.56
Oak Hill .....	1.10	4.14	3.82	3.70	2.44	3.24
Franklinton .....	1.18	3.72	3.45	3.98	3.12	3.17
Westerlo .....	0.94	4.24	2.82	3.64	3.62	3.31

\* Brown Station record.

NOTE.— Report of State Engineer for 1915, Vol. II, page 396, elevation of Bull Run Station should read 1,140, instead of 140, and Claryville total 50.82, instead of 50.80.

## Mean monthly rainfall, in inches, on CATSKILL WATERSHEDS

YEAR	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total for year
<b>ESOPUS CREEK — ABOVE OLIVE BRIDGE DAM</b>													
1906 .....	2.85	2.26	4.80	3.85	5.01	6.16	4.42	3.76	3.18	5.47	2.26	4.08	48.10
1907 .....	2.59	1.66	1.20	2.17	3.83	3.45	3.13	1.17	11.49	6.78	7.06	5.80	50.33
1908 .....	3.49	6.40	2.93	2.98	9.23	2.29	6.32	2.04	2.46	4.21	0.57	2.58	45.50
1909 .....	4.82	6.97	4.35	5.20	4.48	4.38	2.06	4.83	4.17	1.40	1.98	4.63	49.27
1910 .....	7.61	4.37	0.93	10.18	2.95	4.59	2.02	3.93	5.21	1.02	3.70	2.30	48.81
1911 .....	2.60	1.94	3.90	2.37	1.06	5.94	3.19	4.83	4.25	7.50	3.60	2.91	43.99
1912 .....	2.38	2.96	5.96	5.76	4.36	1.72	3.25	7.47	3.44	4.84	0.86	4.70	50.92
1913 .....	4.26	2.28	7.70	3.81	3.74	1.01	1.90	4.86	4.02	6.76	5.60	2.93	48.87
1914 .....	3.40	2.44	4.02	5.94	2.99	3.18	3.49	3.91	0.56	2.97	3.32	3.69	39.91
1915 .....	6.85	5.32	0.21	2.16	2.27	2.96	8.59	8.93	2.99	2.48	3.90	5.86	52.52
1916 .....	1.64	4.48	3.23	2.63	3.35	5.33							
Mean .....	3.86	3.73	3.57	4.28	3.93	3.73	3.84	4.57	4.18	4.34	3.80	3.95	47.82

## RONDOUT CREEK — ABOVE HONK FALLS AND LACKAWACK

YEAR	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total for year
<b>RONDOUT CREEK — ABOVE HONK FALLS AND LACKAWACK</b>													
1906 .....	2.69	2.64	3.91	4.54	4.34	5.23	5.51	4.47	3.87	4.40	2.15	4.20	47.95
1907 .....	3.43	1.93	1.93	2.19	3.68	3.69	2.96	1.89	9.42	5.50	6.32	5.03	47.95
1908 .....	3.12	6.24	3.53	4.02	7.64	1.75	5.08	2.59	2.64	3.74	0.72	3.09	44.16
1909 .....	4.82	6.61	3.99	4.71	3.36	4.39	2.07	4.46	3.54	1.25	1.98	4.47	45.53
1910 .....	7.07	4.53	1.03	8.30	3.60	4.22	2.34	4.08	5.25	1.18	3.86	2.25	47.21
1911 .....	3.44	1.99	4.42	3.11	1.16	6.57	3.27	5.14	4.17	7.10	3.43	3.08	46.88
1912 .....	2.24	2.41	5.86	5.77	3.59	1.91	2.82	7.32	3.79	3.92	3.02	4.78	47.43
1913 .....	5.05	2.61	7.65	4.67	3.46	1.44	3.38	6.04	4.20	6.53	4.74	2.72	52.49
1914 .....	3.33	2.13	3.57	4.91	2.98	4.28	4.06	4.14	0.71	2.64	2.74	3.82	39.31
1915 .....	6.63	5.41	0.33	2.33	3.00	3.45	9.83	7.17	3.03	2.57	3.40	6.11	53.26
1916 .....	2.35	4.87	3.84	3.64	3.71	5.76							
Mean .....	4.02	3.76	3.64	4.38	3.68	3.88	4.13	4.73	4.06	3.88	3.17	3.96	47.22

## SCHOHARIE CREEK — ABOVE PRATTSVILLE

YEAR	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total for year
<b>SCHOHARIE CREEK — ABOVE PRATTSVILLE</b>													
1907 .....	2.05	1.54	1.04	2.33	3.46	3.27	3.28	0.76	8.29	5.51	6.08	4.66	42.27
1908 .....	2.93	5.51	2.31	2.68	7.53	2.22	4.36	2.32	2.82	4.31	0.44	2.01	39.44
1909 .....	4.12	4.82	3.38	4.47	4.24	4.19	1.53	3.23	3.17	1.35	1.85	4.14	40.49
1910 .....	6.67	3.42	0.62	7.76	3.07	5.03	1.54	3.23	4.22	0.80	4.94	1.45	41.75
1911 .....	1.85	1.13	2.13	1.43	1.43	6.09	2.03	4.16	3.21	4.65	1.99	1.79	31.95
1912 .....	1.66	2.14	4.06	4.89	3.64	1.52	2.60	3.84	3.48	3.31	3.14	2.86	37.13
1913 .....	2.78	2.03	5.24	3.22	3.05	1.53	1.46	3.56	3.16	5.34	5.59	1.94	38.92
1914 .....	2.25	2.23	4.50	5.22	3.27	2.96	4.22	4.71	0.87	1.93	2.72	2.62	37.58
1915 .....	4.18	4.09	0.22	2.21	2.19	2.34	8.01	7.50	3.77	2.32	2.53	5.54	44.90
1916 .....	1.06	4.31	2.81	2.66	2.82	4.02							
Mean .....	2.96	3.12	2.63	3.69	3.47	3.32	3.23	3.59	3.67	3.28	3.25	3.00	39.88

Mean monthly rainfall, in inches, on CATSKILL WATERSHEDS — *Continued*

YEAR	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total for year
<b>CATSKILL CREEK — ABOVE OAK HILL</b>													
1907.....	1.92	1.28	1.16	2.38	3.25	3.15	3.31	0.85	6.58	4.18	4.91	3.52	36.49
1908.....	2.43	4.01	1.83	2.15	5.86	1.58	4.00	3.01	1.59	3.35	0.39	1.57	33.77
1909.....	3.56	3.76	2.79	3.00	3.92	3.52	2.36	2.47	2.74	0.96	1.50	3.59	34.17
1910.....	4.67	3.02	0.48	5.70	2.94	4.82	1.21	1.55	4.07	0.91	3.57	0.92	33.86
1911.....	1.32	1.13	2.07	1.55	1.41	7.06	2.20	3.38	2.94	4.32	1.45	1.87	30.70
1912.....	1.71	2.12	3.50	4.50	3.36	1.08	2.63	3.80	3.27	3.86	2.78	2.37	34.98
1913.....	2.66	1.87	4.60	3.05	3.18	2.16	1.83	1.37	2.67	4.89	4.73	1.83	34.84
1914.....	2.10	2.14	4.78	5.32	3.26	2.50	3.97	4.18	0.64	1.63	2.49	2.43	35.24
1915.....	3.40	3.31	0.09	2.03	1.91	2.60	6.93	7.20	2.78	2.22	2.60	5.66	40.73
1916.....	1.09	4.01	3.28	3.56	2.88	3.22							
Mean.....	2.49	2.66	2.46	3.32	3.20	3.17	3.16	3.09	3.03	2.91	2.71	2.64	34.76

Note for Esopus creek. — Jan., 1906, to Nov., 1906, inclusive, average of 6 stations. Dec., 1906, average of 7 stations. Jan., 1907, to June, 1907, inclusive, average of 8 stations. July, 1907, and Aug., 1907, average of 11 stations. Sept., 1907, to Dec., 1909, inclusive, average of 12 stations. Jan., 1910, average of 11 stations. Feb., 1910, and Mar., 1910, average of 12 stations. April, 1910, to Jan., 1915, inclusive, average of 10 stations. Feb., 1915, and Mar., 1915, average of 11 stations. April, 1915, average of 10 stations. May to Oct., 1915, inclusive, average of 11 stations. Nov., 1915, to date, average of 12 stations.

Note for Rondout creek. — Jan., 1906, to Dec., 1906, inclusive, average of 4 stations. Jan., 1907, to Mar., 1910, inclusive, average of 6 stations. April, 1910, to date, average of 5 stations.

Note for Schoharie creek. — Jan., 1907, to June, 1907, inclusive, average of 5 stations. July, 1907, to Dec., 1907, inclusive, average of 7 stations. Jan., 1908, to Mar., 1910, inclusive, average of 5 stations. April, 1910, to date, average of 4 stations.

Note for Catskill creek. — Jan., 1907, to Dec., 1907, inclusive, average of 6 stations. Jan., 1908, to date, average of 5 stations.

NOTE. — Report of State Engineer for 1915, Vol. II, page 397, for Schoharie creek above Prattsville, 1914, October should read 1.93, instead of 1.95.

## WATERSHEDS AT LARGE

Stations maintained by the Board of Water Supply of New York city.

Monthly rainfall, in inches, on various watersheds

1916	Jan.	Feb.	Mar.	April	May	June
<b>ROELIFF JANSEN KILL</b>						
Silvernails.....	1.11	3.01	2.66	2.23	2.74	4.00
<b>WAPPINGER CREEK</b>						
Pleasant Valley.....	1.62	4.57	3.50	2.25	3.23	3.27
<b>PEEKSKILL CREEK</b>						
Cold Spring.....	1.75	4.40	3.59	3.42	3.65	5.25
Peeckskill.....	1.57	3.85	4.14	4.46	4.54	2.92
<b>WALLKILL RIVER</b>						
New Palts.....	1.68	5.64	4.20	2.58	2.50	4.41
Sherwood Corners.....	1.98			3.36	5.30	4.25
<b>MOODNA CREEK</b>						
Cornwall.....	1.38	5.70	3.36	3.56	4.85	4.69

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